



**Transcontinental Gas Pipe Line Company, LLC**  
2800 Post Oak Boulevard  
Houston, Texas 77056  
713-215-2000

September 25, 2020

Ms. Hannah Zegler  
Office of Stormwater Management  
Virginia Department of Environmental Quality (VDEQ)  
Central Office  
1111 East Main Street, Suite 1400  
Richmond, VA 23219

Via electronic mail to: [hannah.zegler@deq.virginia.gov](mailto:hannah.zegler@deq.virginia.gov)

Re: Transcontinental Gas Pipe Line Company, LLC  
Annual Standards & Specification for Erosion & Sediment Control and Stormwater  
Management (AS&S for ESC and SWM)  
2020 Renewal Update – Revision No. 5

Dear Ms. Zegler,

Transcontinental Gas Pipe Line Company, LLC (Transco) hereby provides the VDEQ the 2020 Renewal - Annual Standards & Specification for Erosion & Sediment Control and Stormwater Management; Revision No. 5.

This version includes revisions to address comments received from the VDEQ on September 25, 2020 as well as an updated Appendix Q - Plan Approval Memorandum Template. A summary table of comments received and responses to the comments with the associated page number where the requested information can be found is provided as requested by the VDEQ.

Any questions regarding this submittal should be directed to Kyle Marshall at 713-248-7335 or [Kyle.Marshall@williams.com](mailto:Kyle.Marshall@williams.com).

Respectfully,

Transcontinental Gas Pipe Line Company, LLC.

A handwritten signature in blue ink, appearing to read "Lynda Schubring". The signature is fluid and cursive, with the first name "Lynda" being more prominent than the last name "Schubring".

Lynda Schubring  
Manager of Permitting, Southeast

cc: Joe Dean, Williams  
Josh Henry, Williams  
Laura Rudolf, Williams



**Transcontinental Gas Pipe Line Company, LLC**

**Annual Standards and Specifications (Virginia)**

**Erosion & Sediment Control**

**Stormwater Management**

**2020 Renewal**

**Revision No. 5**

**September 25, 2020**

Transcontinental Gas Pipe Line Company, LLC Annual Standards and Specifications (Virginia) 2020 Renewal VDEQ Comments and Response Documentation		
VDEQ Comment	Transco Response	Page No.
<b>March 5, 2020 VDEQ Letter</b>		
1. Please include a revision date for reference in the final approval letter.	Included on Cover Page	Cover
2. Please include a signed and dated certification statement for these AS&S	Certification included as an appendix	Appendix Y
3. (Purpose and Use) a. (1.) – Please change the title of the 9VAC25-880 regulations to " General VPDES Permit for Discharges of Stormwater from Construction Activities regulations"	Text revised as requested	Page 1-1
b. (2.) – Please ensure that exemption language in this section is verbatim from the statute.	Text revised as requested	Page 1-1 Page 1-2
4. (E-Notification) a. Correct spelling in first sentence to "VDEQ".	Text revised as requested	Page 1-3
b. Please change 'linearprojects@deq.virginia.gov' to standardsandspecs@deq.virginia.gov	Email address revised as requested	Page 1-3
c. Please provide a frequency for which W/T will submit projection tracking to DEQ of all ESC and SWM land disturbing activities. Jan 1st or July 1st of each year is appropriate.	Text revised to July 1 <sup>st</sup> of each year as requested	Page 1-3
5. (Sequence of Construction) – a. Please change 'linearprojects@deq.virginia.gov' to standardsandspecs@deq.virginia.gov	Email address revised as requested	Page 2-1
b. (8.) – Please see comment below in regards to inspection requirements.	Comment noted	N/A
6. (Section 2.) – a. Please ensure that both the ESC and SWM definitions for LDA are included in this section	Text revised as requested	Page 4-1 Page 4-2
7. (9VAC25-840-60 Maintenance and Inspections) – Please ensure that the inspection section of this document is consistent with the following AS&S Holder Inspections (DEQ-Certified Inspectors)	Text revised as requested	Page 4-9
8. (Variance and Exception Requests) a. (1.f., h.) – Please change the '>' sign to "≥".	Text revised as requested	Page 4-1

Transcontinental Gas Pipe Line Company, LLC Annual Standards and Specifications (Virginia) 2020 Renewal VDEQ Comments and Response Documentation		
VDEQ Comment	Transco Response	Page No.
9. (Section 3. Williams Transco Internal Review Checklist) a. Please provide additional certification information. Lay out each requirement (Program administrator, Inspector, Plan Reviewer) with their responsibilities.	Additional information has been added as requested	Page 5-1
b. Please provide additional information on how W/T fulfills certification requirements ... Meaning the certification of program administration cannot be contracted out and must be an employee of the AS&S holder.	Clarification text has been added as requested	Page 5-1
c. Please clarify how W/T delegates authority to individuals fulfilling certification requirements and roles.	While inspection and plan review are contracted out through a Master Service Agreement, there is direct oversight from a Transco representative. Approval of the plans come from Transco.	N/A
10. (Stormwater Pollution Prevention Plans) – Please clarify in this section that SWPPPs are required for projects that are ≥ 1 acre. a. Please include the following list of SWPPP contents: (contents list referenced from 9VAC25-880-70 Part II B. Please reference this section and incorporation additional language as necessary)	Additional information has been added as requested	Page 4-11
b. Please update the SWPPP inspection requirements as follows: (inspection requirements referenced from 9VAC25-880-70 Part II G. Please reference this section and incorporation additional language as necessary)	Additional information has been added as requested	Page 4-12
11. (Waterbody Crossings) – Please remove all references to 'open-cut crossing method' as an option for stream crossing.	Clarification text has been added as requested	Page 6-1
12. Please provide additional information for how W/T documents ESC and SWM plan approval "in writing". The date of the approvable plan should be documented on an approval letter. Stamping the plan set and having an approval letter signed by the AS&S DEQ-Certified Program Administrator is appropriate. This individual must be from W/T and not contracted out. The approval letter should be on W/T letterhead.	A Plan Approval Memorandum Template has been developed to address this request.	Appendix Q

Transcontinental Gas Pipe Line Company, LLC Annual Standards and Specifications (Virginia) 2020 Renewal VDEQ Comments and Response Documentation		
VDEQ Comment	Transco Response	Page No.
13. Please clarify situations in which proposed revisions to ESC/SWM plans will be submitted to the DEQ-certified plan reviewer. Please update this document to include the requirement that redlines be checked and signed off on by the DEQ-certified inspectors and if such modifications require submittal to the ESC/SWM plan reviewer they will be reviewed and reapproved.	Additional information has been added as requested	Page 1-5
14. Please include appendices in this document to house the following: a. Referenced ESC and SWM plan checklists	Appendixes included as requested	Appendix O Appendix P
b. ESC and SWM periodic oversight inspection reports.	Appendix has been included as requested	Appendix R
c. Erosion and Sediment Control measures for use in W/T project. This Appendix should include reference to the VESCH but also any non-VESCH control measure that W/T, or their workforce, intends to utilize within the next year on their projects. Please include all supporting and informational documentation for non-VESCH control measures.	Appendixes included as requested	Appendix A Appendix B Appendix C Appendix D Appendix E Appendix F Appendix G Appendix H Appendix I Appendix J

Transcontinental Gas Pipe Line Company, LLC Annual Standards and Specifications (Virginia) 2020 Renewal VDEQ Comments and Response Documentation		
VDEQ Comment	Transco Response	Page No.
<b>August 20, 2020 VDEQ Letter</b>		
1. (Purpose and Use) a. (1.) – Exemption language was included as previously requested but the ESC and SWM exemptions are grouped into one list. Please separate out the ESC and SWM exemptions, as there are some that are unique to each."	Text revised as requested	Page 1-1 Page 1-2
2. (Sequence of Construction) a. (1.) – Please update this paragraph to reflect the requirement that two week e-notifications are required on all regulated land disturbing activities and not just 'routine maintenance activities'.	Text revised as requested	Page 2-1
b. (2.) Update this section to be consistent with MS-4, "4. Sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment shall be constructed as a first step in any land-disturbing activity and shall be made functional before upslope land disturbance takes place."	Text revised as requested	Page 2-1
c. (3.) – Update this section to reference MS-16 for the requirement to place trench spoils on the upslope sides of trenches.	Text revised as requested	Page 2-2
3. (4.1) - Please change the '>' sign to "≥" throughout this section.	Text revised as requested	Page 4-1
4. (4.2, 4.2.1) – Remove 'c. projects that permanently change the land cover' under the criteria for projects that are required to have a SWM plan. This requirement is based on the SWM threshold for land disturbance. Additionally, projects that are part of a common plan of development, whose total land disturbance is ≥ 1 acre, are required to have SWM plans.	Text removed as requested	Page 4-3
5. (4.5) – Please update this section to include additional provisions related to "construction inspection and enforcement" and "documenting onsite changes as they occur". a. Periodic ESC and SWM Inspections should ensure compliance with these AS&S and the ESC and SWM statutes and regulations. Inspection reports should document onsite changes by noting issues of non-compliance. Corrective actions should be called out on inspection reports and include timeframes for completion.	Text revised as requested	Page 4-11

Transcontinental Gas Pipe Line Company, LLC Annual Standards and Specifications (Virginia) 2020 Renewal VDEQ Comments and Response Documentation		
VDEQ Comment	Transco Response	Page No.
6. (4.6 Stormwater Pollution Prevention Plans) a. Please update the first paragraph to read the following: Per 9VAC25-870-380.A.2., DEQ may not require a CGP for the oil and gas work further detailed in the referenced section. However, projects covered under these AS&S with $\geq 1$ acre of land disturbance (or part of a common plan of development) are required to have a SWPPP that is consistent with 9VAC25-880.	Text revised as requested	Page 4-11
b. Please note in this section that although some sections within 9VAC25-880 have been included verbatim from the regulation this does not replace the requirement that all of 9VAC25-880 be complied with.	Comment noted.	N/A
c. Please include reference to and quote verbatim section 9VAC25-880-70 Part II H. for corrective actions. Additional information regarding corrective actions can also be found in section 9VAC25-880-70 Part II G. 4.	Text revised as requested	Page 4-12
7. Repeat comment – Please provide additional information for how W/T documents ESC and SWM plan approval “in writing”. The date of the approvable plan should be documented on an approval letter. Stamping the plan set and having an approval letter signed by the AS&S DEQ-Certified Program Administrator is appropriate. This individual must be from W/T and not contracted out. The approval letter should be on W/T letterhead. a. Include comment response procedure within the document.	A Plan Approval Memorandum Template has been developed to address this request.	Appendix Q
8. Repeat comment – Please clarify situations in which proposed revisions to ESC/SWM plans will be submitted to the DEQ-certified plan reviewer. Please update this document to include the requirement that redlines be checked and signed off on by the DEQ-certified inspectors and if such modifications require submittal to the ESC/SWM plan reviewer they will be reviewed and reapproved. a. Include comment response procedure within the document.	Additional information has been added as requested	Page 1-5
9. Please clarify why CGP specific forms have been included in appendices when DEQ may not permit oil and gas work detailed in 9VAC25-870-380.A.2.	Appendixes W, X, and Y have been removed.	N/A
10. (Appendix Q) – Please note that representative inspections are not an option for AS&S ESC and SWM periodic oversight inspections.	The inspection form has been revised to remove the reference to ‘representative’.	Appendix R

Transcontinental Gas Pipe Line Company, LLC Annual Standards and Specifications (Virginia) 2020 Renewal VDEQ Comments and Response Documentation		
VDEQ Comment	Transco Response	Page No.
<b>September 25, 2020 VDEQ Comments</b>		
1. (1.4, 3., 4.1) - Please ensure consistency throughout these sections for the approval of plans utilizing W/T's Appendix Q via the program administer.	Text revised as requested to ensure consistency among the sections	1-4 1-5 3-1
2. (4.1) - Please remove 'State' from the title of this section. State entity AS&S holders are referred to in this way and we want to avoid confusion for W/T's private linear utility projects.	Text revised as requested	Page 4-1
3. (4.2) - b. bullet was lost in formatting for "Land disturbance area $\geq$ 1 acre in non-CBPA."	Text revised as requested	Page 4-2
4. (Appendix Q) - Please include a space to record the date of the plan that is being approved.	Additional information has been added to the appendix as requested	Appendix Q



# Contents

## Annual Standards and Specifications (Virginia)

<b>1.</b>	<b>Purpose and Use .....</b>	<b>1-1</b>
1.1	ESC .....	1-1
1.2	SWM.....	1-2
1.3	E-Notification .....	1-4
<b>2.</b>	<b>Sequence of Construction .....</b>	<b>2-1</b>
<b>3.</b>	<b>Minimum Standards .....</b>	<b>3-1</b>
3.1	9VAC25-840-40 Minimum Standards.....	3-1
<b>4.</b>	<b>Technical Requirements for Projects Under VDEQ Office of Stormwater Management .....</b>	<b>4-1</b>
4.1	Technical Criteria, Requirements, and Definitions .....	4-1
4.1.1	VDEQ Oversight .....	4-2
4.2	Stormwater Management Plans and Waiver Requests.....	4-2
4.2.1	Stormwater Nutrient Impacts and Mitigation.....	4-3
4.3	9VAC25-870-112 Long-term Maintenance of Permanent Stormwater Management Facilities .....	4-6
4.4	9VAC25-840-50 Variance and Deviation Requests .....	4-7
4.1.1	Variance Requests .....	4-7
4.1.2	Deviation Requests.....	4-8
4.5	9VAC25-840-60 Maintenance and Inspections.....	4-8
4.6	Stormwater Pollution Prevention Plans .....	4-10
4.7	Non-VESCH Control Measures .....	4-13
4.8	Project Completion .....	4-14
<b>5.</b>	<b>Transco Internal Review Checklist.....</b>	<b>5-1</b>
5.1	9VAC25-870-126 Reports and Record Keeping .....	5-1
<b>6.</b>	<b>Wetland and Waterbody Construction and Mitigation Procedures (FERC Requirements) .....</b>	<b>6-1</b>
I.	Applicability .....	6-1
II.	Pre-construction Filing .....	6-2
III.	Environmental Inspections .....	6-3
IV.	Pre-construction Planning .....	6-3
V.	Waterbody Crossings .....	6-5
VI.	Wetland Crossings .....	6-12
VII.	Hydrostatic Testing.....	6-18
<b>7.</b>	<b>Seeding Mixture Tables .....</b>	<b>7-1</b>

---

<b>8.</b>	<b>Upland Erosion Control, Revegetation, and Maintenance Plan (FERC Requirements) .....</b>	<b>8-1</b>
	I. Applicability .....	8-1
	II. Supervision and Inspection .....	8-1
	III. Pre-construction Planning .....	8-4
	IV. Installation.....	8-6
	V. Restoration .....	8-11
	VI. Off-Road Vehicle Control.....	8-15
	VII. Post-Construction Activities and Reporting .....	8-16
<b>9.</b>	<b>References .....</b>	<b>9-1</b>

## **Appendixes**

### **Alternative Best Management Practices (BMP)**

Appendix A	Diversion Fence (DF)
Appendix B	Super Silt Fence (SSF)
Appendix C	Rock Filter Outlet (RFO)
Appendix D	Filter Bag (FB)
Appendix E	Compost Filter Sock (CFS)
Appendix F	Wash Rack Option
Appendix G	Cofferdam Crossing
Appendix H	Dam and Pump Crossing
Appendix I	Flume Crossing
Appendix J	Timber Mat Construction Entrance (Limited Use)

### **Manufacturer Data Sheets**

Appendix K	CFS Manufacturer Data Sheet
Appendix L	Diversion Filter Sock (DFS) Manufacturer Data Sheet
Appendix M	Slope Stabilization Manufacturer Data Sheet

### **AS&S Tables and Checklists**

Appendix N	VDEQ Application Package Check Sheet for VPDES Projects with VDEQ-Approved AS&S
Appendix O	ESC Plan Checklist
Appendix P	SWM Plan Checklist
Appendix Q	Plan Approval Memorandum Template
Appendix R	ESC and SWM Inspection Report Template
Appendix S	Deviation Request Log

### **Construction Standard Details**

Appendix T	Typical Section of Construction Right-Of-Way
Appendix U	Trenched Road Crossing (RX.1)
Appendix V	Bored Road / Railroad Crossing (RX.2)
Appendix W	Wetland Equipment Crossing (WEC)
Appendix X	Wetland Crossing Configuration (Type I, II, III)

### **Certifications**

Appendix Y	Certification Statement
------------	-------------------------

## Abbreviations and Acronyms

AS&S	Annual Standards and Specifications
BMPs	Best Management Practices
CBPA	Chesapeake Bay Preservation Area
CFS	Compost Filter Sock
CGP	Construction General Permit
Director	Director of the Office of Energy Projects
DF	Diversion Fence
DFS	Diversion Filter Sock
ESC	Erosion & Sediment Control
FB	Filter Bag
FERC	Federal Energy Regulatory Commission
FERC Plan	FERC Upland Erosion Control, Revegetation, and Maintenance Plan
HDD	Horizontal Directional Drills
HUC	Hydrologic Unit Code
NOT	Notice of Termination
NPDES	National Pollutant Discharge Elimination System
NWI	National Wetlands Inventory
OEP	Office of Energy Projects
PCB	Polychlorinated Biphenyl
Plan	Upland Erosion Control, Revegetation, and Maintenance Plan
Procedures	Wetland and Waterbody Construction and Mitigation Procedures
RFO	Rock Filter Outlet
RLD	Responsible Land Disturber
ROW	Right-of-way
Secretary	Secretary of the FERC
SPCC	Spill Prevention, Control, and Countermeasure
SSF	Super Silt Fence
SWM	Stormwater Management
SWPPP	Stormwater Management Pollution Prevention Plan

TMDL	Total Maximum Daily Load
TP	Total Phosphorus
Transco	Transcontinental Gas Pipe Line Company, LLC
Transco Plan	Transco Upland Erosion Control, Revegetation, and Maintenance Plan
COE	U.S. Army Corps of Engineers
VDEQ	Virginia Department of Environmental Quality
VESCH	Virginia Erosion and Sediment Control Handbook
VESCP	Virginia Erosion and Sediment Control Program
VPDES	Virginia Pollutant Discharge Elimination System
VRRM	Virginia Runoff Reduction Method
VSMP	Virginia Stormwater Management Program
WLA	Waste Load Allocation

# 1. PURPOSE AND USE

These Annual Standards and Specifications (AS&S) are composed of specifications for erosion & sediment control (ESC) and stormwater management (SWM) that apply to regulated land-disturbing activities (as defined in Section 4.1) to be conducted by Transcontinental Gas Pipe Line Company, LLC (Transco) in Virginia and include by reference the following:

- Virginia erosion and sediment control law (§62.1-44.15:51 et seq. as amended);
- Virginia erosion and sediment control regulations (9VAC25-840 et seq. as amended);
- Virginia erosion and sediment control certification regulations (9VAC25-850 et seq. as amended);
- Virginia stormwater management act (§62.1-44.15:24 et seq. as amended);
- Virginia stormwater management program regulations (9VAC25-870 et seq. as amended); and
- General Virginia Pollutant Discharge Elimination System (VPDES) Permit for Discharges of Stormwater from Construction Activities regulations (9VAC25-880 et seq. as amended).

The following activities are exempt from state and local ESC regulations per §62.1-44.15:51 et seq. and SWM regulations per § 62.1-44.15:34:

## 1.1 ESC

- Minor land-disturbing activities such as home gardens and individual home landscaping, repairs, and maintenance work;
- Individual service connections;
- Installation, maintenance, or repair of any underground public utility lines when such activity occurs on an existing hard surfaced road, street, or sidewalk, provided the land-disturbing activity is confined to the area of the road, street, or sidewalk that is hard surfaced;
- Septic tank lines or drainage fields unless included in an overall plan for land-disturbing activity relating to construction of the building to be served by the septic tank system;
- Permitted surface or deep mining operations and projects, or oil and gas operations and projects conducted pursuant to Title 45.1;
- Tilling, planting, or harvesting of agricultural, horticultural, or forest crops, livestock feedlot operations, or as additionally set forth by the Board in regulation, including engineering operations as follows: construction of terraces, terrace outlets, check dams, desilting basins, dikes, ponds, ditches, strip cropping, lister furrowing, contour cultivating, contour furrowing, land drainage, and land irrigation; however, this exception shall not apply to harvesting of forest crops unless the area on which harvesting occurs is reforested artificially or naturally in accordance with the provisions of Chapter 11 (§ 10.1-1100 et seq.) of Title 10.1 or is converted to bona fide agricultural or improved pasture use as described in subsection B of § 10.1-1163;
- Repair or rebuilding of the tracks, rights-of-way, bridges, communication facilities, and other related structures and facilities of a railroad company;
- Agricultural engineering operations, including but not limited to the construction of terraces, terrace outlets, check dams, desilting basins, dikes, ponds not required to comply with the provisions of the Dam Safety Act (§ 10.1-604 et seq.), ditches, strip

cropping, lister furrowing, contour cultivating, contour furrowing, land drainage, and land irrigation;

- Disturbed land areas of less than 10,000 square feet in size or 2,500 square feet in all areas of the jurisdictions designated as subject to the Chesapeake Bay Preservation Area (CBPA) Designation and Management Regulations; however, the governing body of the program authority may reduce this exception to a smaller area of disturbed land or qualify the conditions under which this exception shall apply;
- Installation of fence and sign posts or telephone and electric poles and other kinds of posts or poles;
- Shoreline erosion control projects on tidal waters when all of the land-disturbing activities are within the regulatory authority of and approved by local wetlands boards, the Marine Resources Commission, or the United States Army Corps of Engineers; however, any associated land that is disturbed outside of this exempted area shall remain subject to this article and the regulations adopted pursuant thereto; and
- Emergency work to protect life, limb, or property, and emergency repairs; however, if the land-disturbing activity would have required an approved erosion and sediment control plan, if the activity were not an emergency, then the land area disturbed shall be shaped and stabilized in accordance with the requirements of the Virginia Erosion and Sediment Control Program (VESCP) authority.

## 1.2 SWM

- Permitted surface or deep mining operations and projects, or oil and gas operations and projects conducted under the provisions of Title 45.1;
- Clearing of lands specifically for agricultural purposes and the management, tilling, planting, or harvesting of agricultural, horticultural, or forest crops, livestock feedlot operations, or as additionally set forth by the Board in regulations, including engineering operations as follows: construction of terraces, terrace outlets, check dams, desilting basins, dikes, ponds, ditches, strip cropping, lister furrowing, contour cultivating, contour furrowing, land drainage, and land irrigation; however, this exception shall not apply to harvesting of forest crops unless the area on which harvesting occurs is reforested artificially or naturally in accordance with the provisions of Chapter 11 (§ 10.1-1100 et seq.) or is converted to bona fide agricultural or improved pasture use as described in subsection B of § 10.1-1163;
- Single-family residences separately built and disturbing less than one acre and not part of a larger common plan of development or sale, including additions or modifications to existing single-family detached residential structures. However, localities subject to the provisions of the Chesapeake Bay Preservation Act (§ 62.1-44.15:67 et seq.) may regulate these single-family residences where land disturbance exceeds 2,500 square feet;
- Land-disturbing activities that disturb less than one acre of land area except for land-disturbing activity exceeding an area of 2,500 square feet in all areas of the jurisdictions designated as subject to the Chesapeake Bay Preservation Area Designation and Management Regulations adopted pursuant to the provisions of the Chesapeake Bay Preservation Act (§ 62.1-44.15:67 et seq.) or activities that are part of a larger common plan of development or sale that is one acre or greater of disturbance; however, the governing body of any locality that administers a VSMP may reduce this exception to a

smaller area of disturbed land or qualify the conditions under which this exception shall apply;

- Discharges to a sanitary sewer or a combined sewer system;
- Activities under a state or federal reclamation program to return an abandoned property to an agricultural or open land use;
- Routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original construction of the project. The paving of an existing road with a compacted or impervious surface and reestablishment of existing associated ditches and shoulders shall be deemed routine maintenance if performed in accordance with this subsection; and
- Conducting land-disturbing activities in response to a public emergency where the related work requires immediate authorization to avoid imminent endangerment to human health or the environment. In such situations, the VSMP authority shall be advised of the disturbance within seven days of commencing the land-disturbing activity, and compliance with the administrative requirements of subsection A is required within 30 days of commencing the land-disturbing activity.

When SWM control devices or other techniques are required for regulated land-disturbing activities, their individual project specific plans (construction drawings/sheets and narrative) will contain adequate information to ensure the long-term responsibility and maintenance of the required SWM control devices or other techniques.

ESC and SWM administration, plan design, review and approval, and construction inspection and enforcement will be conducted in compliance with the approved AS&S and all reference laws, regulations, handbooks, and technical bulletins.

The use of Virginia erosion and sediment control handbook (VESCH) control measures, along with accompanying technical documents and guidance, is strongly preferred. Non-VESCH ESC measures, best management practices (BMPs), and specifications are included in this AS&S submission, but their use may be further reviewed and approved by the Virginia Department of Environmental Quality (VDEQ) on a project specific basis. The following Non-VESCH ESC measures and manufacturer data sheets are provided as attachments to this AS&S:

- Appendix A Diversion Fence (DF)
- Appendix B Super Silt Fence (SSF)
- Appendix C Rock Filter Outlet (RFO)
- Appendix D Filter Bag (FB)
- Appendix E Compost Filter Sock (CFS)
- Appendix F Wash Rack Option
- Appendix G Cofferdam Crossing
- Appendix H Dam and Pump Crossing
- Appendix I Flume Crossing
- Appendix J Timber Mat Construction Entrance (Limited Use)
- Appendix K CFS Manufacturer Data Sheet
- Appendix L Diversion Filter Sock (DFS) Manufacturer Data Sheet
- Appendix M Slope Stabilization Manufacturer Data Sheet



This AS&S includes by reference all VESCH specifications and related technical documents and guidance specifications. Approved VESCH specifications and approved deviation requests to VESCH specifications will be followed by Transco.

### 1.3 E-Notification

A VDEQ certified responsible land disturber (RLD) will be named for each regulated land-disturbing activity prior to initiating land-disturbance. ESC and SWM program personnel will have already obtained certification or will enroll in the VDEQ ESC and SWM training and certification program prior to conducting site inspections. Transco will submit project tracking to VDEQ of all ESC and SWM land-disturbing activities on July 1<sup>st</sup> of each year. Transco may (at VDEQ's discretion) be required to provide weekly e-reporting to the department's applicable regional office.

A list of all proposed projects planned for construction will be submitted to standardsandspecs@deq.Virginia.gov. The following information will be submitted for each project:

- Project name or project number
- The location & description of the activity (including nearest intersection, latitude, and longitude);
- Scheduled start and finish date of the activity;
- Any variances, exceptions, waivers, or deviations associated with the project;
- Any off-site compliance options (nutrient credits);
- The acreage of disturbance for the project;
- The on-site project manager name and contact information; and
- The contact information for the on-site RLD

Project information must be provided to the VDEQ two (2) weeks in advance of land-disturbing activities by e-mail at standardsandspecs@deq.Virginia.gov. An electronic copy of this notification will be kept for project tracking purposes. The VDEQ Application Package Check Sheet for VPDES Projects with VDEQ-Approved AS&S (Appendix N) will be used as a guide for package submittals to VDEQ.

Transco proposes to use the included measures and details, where needed, to control soil erosion and off-site sedimentation. In compliance with § 62.1-44.15:55 of the Virginia erosion and sediment control law, on-site changes to the individual project specific plan may occur when adequate documentation of the changes are shown on the individual project specific plan and the stormwater management pollution prevention plan (SWPPP), if required. The specific comment-response procedure will be as follows:

1. Potential revisions identified by VDEQ-certified inspector(s).
2. The VDEQ-certified plan reviewer and VDEQ-certified program administrator review the potential revisions.
3. If the revisions are approved by the VDEQ-certified plan reviewer and VDEQ-certified program administrator, the ESC / SWM will be updated using redline mark-ups to be retained at the project site. Redline revisions will be checked and signed off by VDEQ-certified inspector(s). Changes to the ESC / SWM plans and approvals will be documented

170

171

in the ESC and SWM plan approval memorandum template provided as Appendix Q and will be included in the SWPPP for the given project.

## 2. SEQUENCE OF CONSTRUCTION

All plan reviewers, inspectors, program administrators, and combined administrators authorized by Transco must be certified in accordance with 9VAC25-850. The Transco appointed inspectors, once certified by VDEQ, shall have the authority to order correction of any acts that violate the conditions of the approved ESC and/or SWM plans or any other permit conditions associated with the projects.

1. The Transco authorized representative shall contact the VDEQ (standardsandspecs@deq.Virginia.gov) two (2) weeks prior to regulated land disturbing activities, as notified in the “e-notification” section.
2. Install construction entrances, sediment barriers, diversion terraces, and/or equipment crossings, as needed and described below, prior to the excavation work or topsoil segregation. All applicable soil ESC measures shall be implemented in accordance with the guidelines contained here in with this environmental plan and prior to the excavation work. In accordance with Minimum Standard (MS)-4 of 9VAC25-840-40, sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment shall be constructed as a first step in any land-disturbing activity and shall be made functional before upslope land disturbance takes place. All measures shall be maintained during and after the excavation work, until the final site stabilization is achieved. Upon achieving groundcover that is uniform, mature enough to survive and will inhibit erosion in the disturbed area, all temporary soil ESC measures shall be removed.
  - a. Construction access: the site excavation locations would be accessed from the nearest public road or other approved access/field road. The excavation equipment would be transported to the site. The equipment may be unloaded at a staging area (if sufficient area is available) adjacent to the public road or other access. No surface disturbance would be made to the staging area. Due to the short duration of the pipeline excavation work, equipment traffic is normally limited.
  - b. Where construction vehicle access routes intersect paved or public roads, provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface in accordance with Minimum Standard 17. Where sediment is transported onto a public road surface or other paved area by equipment or vehicles accessing the site, sediment shall be removed immediately from the road by sweeping, shoveling, or scraping, and shall be transported to a sediment-controlled disposal area. Road washing shall be allowed only after the sediment is removed in above manner. Other means of cleaning vehicles prior to entering roads or driveways may include hand removal of mud or tire washing. Whenever sediment tracking onto road surfaces is a potential or if required by VDEQ, construction entrances, detail “CE”, shall be installed. Where access to the site is down and along the pipeline right-of-way (ROW) corridor, a minimum access pathway for equipment passage shall be cleared of brush, grubbed, and/or mowed. Most sites will require only mowing. All cleared or grubbed brush debris shall be removed from the site or maybe chipped for mulch. Soil ESC measures shall be installed, if required and needed. The typical wetland equipment crossing, detail “WEC”; bridge equipment crossing, detail “BEC”; or culvert equipment crossing,

detail “CEC”, would be utilized for any required wetland or stream crossings, where access to the site would continue down and along the pipeline ROW corridor. The following Construction Standard Details are provided with this AS&S:

- Appendix T Typical Section of Construction ROW
- Appendix U Trenched Road Crossing (RX.1)
- Appendix V Bored Road / Railroad Crossing (RX.2)
- Appendix W Wetland Equipment Crossing (WEC)
- Appendix X Wetland Crossing Configuration (Type I, II, III)

c. Preparation of work area: the excavation area shall be clearly staked by Transco surveyors. All existing pipelines, utilities, and/or drain lines shall be marked by calling Miss Utility at 811. The minimum area necessary shall be cleared of brush and other vegetation or mowed. The appropriate soil erosion control measures shall be installed prior to any land disturbance or excavation work. All topsoil shall be segregated in residential areas, wetland areas (except in areas where standing water or saturated soils are present), all actively cultivated agricultural areas, and where requested by the landowner or other local agency.

3. Excavate down to the existing pipeline. In accordance with MS-16 of 9VAC25-840-40, the spoil shall be placed on the upslope side of the pipeline excavation trench to prevent sediment runoff from the soil stockpiles. If possible, the pipeline excavation, visual inspection, repair, recoating, and backfilling should be limited to that which can normally be completed in one day. Any accumulated groundwater shall be pumped out of the pipeline trench and discharged through a filter bag (see Appendix D) or dewatering structure that is consistent with the criteria stated in the VESCH 3.26 dewatering structure specification. Discharges shall flow on to well-vegetated, grassy area adjacent to the work site and away from waterways. No trench water shall be discharged directly into waterways in accordance with Minimum Standard 19.
4. Final grading and cleanup shall be performed upon completion of the pipeline excavation work. All disturbed areas shall be restored to their original contours and conditions. If necessary, the disturbed area shall be plowed, tilled, or scarified to achieve the satisfactory soil compaction.
5. After completion of the final grading, the disturbed area will be revegetated, chatted, or paved (depending on location and pre-work conditions).
6. Repeat steps 2 to 5 for each excavation site.
7. All temporary soil ESC measures shall be inspected, maintained, and/or repaired in accordance with the VESCH criteria and/or for each individual control measure, and to assure continued performance of their intended function until removal after a permanent vegetative cover is established per Minimum Standard 3. All excavation sites shall be inspected after a runoff producing storm event until final site stabilization is achieved. All measures shall be disposed of within thirty (30) days after the final site stabilization is achieved or after the temporary measures are no longer needed.
8. The certified inspector shall provide for and document inspections at the following frequency: during or immediately following initial installation of ESC measures, at least

86  
87

once every two-week period, within 48 hours following any runoff producing storm event,  
and at the completion of the project.

### 3. MINIMUM STANDARDS

All land-disturbing activities undertaken on private and public lands in the commonwealth of Virginia must meet the 19 Minimum Standards for ESC in section 9VAC25-840-40 of the Virginia erosion and sediment control regulations.

A VDEQ certified ESC and/or SWM plan reviewer (as appropriate) and VDEQ-certified program administrator must review and approve the project specific plans prior to implementation. Approval of the ESC and/or SWM plan will be documented using the ESC and SWM plan approval memorandum template provided in Appendix Q and will be included in the SWPPP for the given project. The applicant is responsible for ensuring compliance with the minimum standards that apply to the specific project activities. Please refer to the regulations for a complete copy of the minimum standards.

#### 3.1 9VAC25-840-40 Minimum Standards

A VESCP must be consistent with the following criteria, techniques, and methods:

1. Permanent or temporary soil stabilization shall be applied to denuded areas within seven (7) days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven (7) days to denuded areas that may not be at final grade but will remain dormant for longer than fourteen (14) days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one (1) year.
2. During construction of the project, soil stock piles and borrow areas shall be stabilized or protected with sediment trapping measures. The applicant is responsible for the temporary protection and permanent stabilization of all soil stockpiles on site as well as borrow areas and soil intentionally transported to and from the project site.
3. A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that is uniform, mature enough to survive, and will inhibit erosion.
4. Sediment basins and traps, perimeter dikes, sediment barriers, and other measures intended to trap sediment shall be constructed as a first step in any land-disturbing activity and shall be made functional before upslope land disturbance takes place.
5. Stabilization measures shall be applied to earthen structures such as dams, dikes, and diversions immediately after installation.
6. Sediment traps and sediment basins shall be designed and constructed based upon the total drainage area to be served by the trap or basin.
  - a. The minimum storage capacity of a sediment trap shall be 134 cubic yards per acre of drainage area and the trap shall only control drainage areas less than three (3) acres.
  - b. Surface runoff from disturbed areas that is comprised of flow from drainage areas greater than or equal to three (3) acres shall be controlled by a sediment basin.

The minimum storage capacity of a sediment basin shall be 134 cubic yards per acre of drainage area. The outfall system shall, at a minimum, maintain the structural integrity of the basin during a 25-year storm of 24-hour duration. Runoff coefficients used in runoff calculations shall correspond to a bare earth condition or those conditions expected to exist while the sediment basin is utilized.

7. Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. Slopes that are found to be eroding excessively within one (1) year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected.
8. Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume, or slope drain structure.
9. Whenever water seeps from a slope face, adequate drainage or other protection shall be provided.
10. All storm sewer inlets that are made operable during construction shall be protected so that sediment-laden water cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment.
11. Before newly constructed stormwater conveyance channels or pipes are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel.
12. When work in a live watercourse is performed, precautions shall be taken to minimize encroachment, control sediment transport, and stabilize the work area to the greatest extent possible during construction. Non-erodible material shall be used for the construction of causeways and cofferdams. Earthen fill may be used for these structures if armored by non-erodible cover materials.
13. When a live watercourse must be crossed by construction vehicles more than twice in any six-month period, a temporary vehicular stream crossing constructed of non-erodible material shall be provided.
14. All applicable federal, state, and local requirements pertaining to working in or crossing live watercourses shall be met.
15. The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed.
16. Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:
  - a. No more than 500 linear feet of trench may be opened at one (1) time.
  - b. Excavated material shall be placed on the uphill side of trenches.
  - c. Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property.
  - d. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.
  - e. Restabilization shall be accomplished in accordance with this chapter.
  - f. Applicable safety requirements shall be complied with.
17. Where construction vehicle access routes intersect paved or public roads, provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface. Where sediment is transported onto a paved or public road surface, the road

surface shall be cleaned thoroughly at the end of each day. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner. This provision shall apply to individual development lots as well as to larger land-disturbing activities.

18. All temporary ESC measures shall be removed within thirty (30) days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the VESCP authority. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.
19. Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion, and damage due to increases in volume, velocity, and peak flow rate of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with the following standards and criteria. Stream restoration and relocation projects that incorporate natural channel design concepts and are not man-made channels shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels:
  - a. Concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or man-made receiving channel, pipe, or storm sewer system. For those sites where runoff is discharged into a pipe or pipe system, downstream stability analyses at the outfall of the pipe or pipe system shall be performed.
  - b. Adequacy of all channels and pipes shall be verified in the following manner:
    - i. The applicant shall demonstrate that the total drainage area to the point of analysis within the channel is 100 times greater than the contributing drainage area of the project in question; or
    - ii. Natural channels shall be analyzed by the use of a 2-year storm to verify that stormwater will not overtop channel banks nor cause erosion of channel bed or banks.
    - iii. All previously constructed man-made channels shall be analyzed by the use of a 10-year storm to verify that stormwater will not overtop its banks and by the use of a 2-year storm to demonstrate that stormwater will not cause erosion of channel bed or banks; and
    - iv. pipes and storm sewer systems shall be analyzed by the use of a 10-year storm to verify that stormwater will be contained within the pipe or system.
  - c. If existing natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall:
    - i. Improve the channels to a condition where a 10-year storm will not overtop the banks and a 2-year storm will not cause erosion to the channel, the bed, or the banks;
    - ii. Improve the pipe or pipe system to a condition where the 10-year storm is contained within the appurtenances;
    - iii. Develop a site design that will not cause the pre-development peak runoff rate from a 2-year storm to increase when runoff outfalls into a natural



- channel or will not cause the pre-development peak runoff rate from a 10-year storm to increase when runoff outfalls into a man-made channel; or
- iv. Provide a combination of channel improvement, stormwater detention, or other measures which is satisfactory to the VESCP authority to prevent downstream erosion.
- d. The applicant shall provide evidence of permission to make the improvements.
- e. All hydrologic analyses shall be based on the existing watershed characteristics and the ultimate development condition of the project.
- f. If the applicant chooses an option that includes stormwater detention, the applicant shall obtain approval from the VESCP of a plan for maintenance of the detention facilities. The plan shall set forth the maintenance requirements of the facility and the person responsible for performing the maintenance.
- g. An outfall from a detention facility shall be discharged to a receiving channel, and energy dissipaters shall be placed at the outfall of all detention facilities as necessary to provide a stabilized transition from the facility to the receiving channel.
- h. All on-site channels must be verified to be adequate.
- i. Increased volumes of sheet flows that may cause erosion or sedimentation on adjacent property shall be diverted to a stable outlet, adequate channel, pipe or pipe system, or to a detention facility.
- j. In applying these SWM criteria, individual lots or parcels in a residential, commercial, or industrial development shall not be considered to be separate development projects. Instead, the development, as a whole, shall be considered to be a single development project. Hydrologic parameters that reflect the ultimate development condition shall be used in all engineering calculations.
- k. All measures used to protect properties and waterways shall be employed in a manner which minimizes impacts on the physical, chemical, and biological integrity of rivers, streams, and other waters of the state.
- l. Any plan approved prior to July 1, 2014 that provides for SWM that addresses any flow rate capacity and velocity requirements for natural or man-made channels shall satisfy the flow rate capacity and velocity requirements for natural or man-made channels if the practices are designed to (i) detain the water quality volume and to release it over 48 hours; (ii) detain and release over a 24-hour period the expected rainfall resulting from the one (1) year, 24-hour storm; and (iii) reduce the allowable peak flow rate resulting from the 1.5, 2, and 10-year, 24-hour storms to a level that is less than or equal to the peak flow rate from the site assuming it was in a good forested condition, achieved through multiplication of the forested peak flow rate by a reduction factor that is equal to the runoff volume from the site when it was in a good forested condition.
- m. For plans approved on and after July 1, 2014, the flow rate capacity and velocity requirements of § 62.1-44.15:52 A of the act and this subsection shall be satisfied by compliance with water quantity requirements in the stormwater management act (§ 62.1-44.15:24 et seq. of the Code of Virginia) and attendant regulations, unless such land-disturbing activities are in accordance with

173  
174  
175  
176  
177

9VAC25-870-48 of the Virginia stormwater management program (VSMP) regulations.

- n. Compliance with the water quantity minimum standards set out in 9VAC25-870-66 of the VSMP regulation shall be deemed to satisfy the requirements of this subdivision

## 4. TECHNICAL REQUIREMENTS FOR PROJECTS UNDER VDEQ OFFICE OF STORMWATER MANAGEMENT

### 4.1 Technical Criteria, Requirements, and Definitions

#### Threshold Criteria

The ESC plan will be prepared, reviewed, and approved by VDEQ certified plan reviewers for a regulated land-disturbing activity  $\geq 10,000$  sq. ft. or 2,500 sq. ft. in a CBPA. An erosion impact area is defined as an area of land not associated with current land-disturbing activity but subject to persistent soil erosion resulting in the delivery of sediment onto neighboring properties or into state waters. This definition shall not apply to any lot or parcel of land of 10,000 sq. ft. or less used for residential purposes or to shorelines where the erosion results from wave action or other coastal processes. ESC plans will be created for any qualifying land disturbance, and will adhere to 9VAC25-840 et seq. Transco will also prepare ESC plans if the requirements of individual municipalities are more stringent than those set forth by the VDEQ. An ESC Plan Checklist is included as Appendix O.

A SWM plan will be created and reviewed by a VDEQ certified plan reviewer for any land-disturbing activity  $\geq 1$  acre in size, or for projects that permanently alter land cover according Technical Guidance Memo No. 16-2001 (Virginia Runoff Reduction Method spreadsheet) regardless of land disturbance, and will uphold water quality and quantity standards set in 9VAC25-870. Any land disturbance  $\geq 2,500$  sq. ft. taking place within a CBPA shall adhere to the standards set in 9VAC25-830. A SWM Plan Checklist is included as Appendix P.

A ESC and SWM plan approval memorandum template that documents acceptance by the VDEQ-certified plan reviewer and VDEQ-certified program administrator is included as Appendix Q and will be included in the SWPPP for a given project.

A SWPPP will be prepared for any project where the land-disturbing activity is equal or greater than 1 acre in size. SWPPPs are further discussed in Section 4.6.

#### Land-disturbing Activity Definitions

SWM - "Land disturbance" or "land-disturbing activity" means a man-made change to the land surface that potentially changes its runoff characteristics including clearing, grading, or excavation, except that the term shall not include those exemptions specified in § 62.1-44.15:34.

ESC - "Land-disturbing activity" means any man-made change to the land surface that may result in soil erosion from water or wind and the movement of sediments into state waters or onto lands in the Commonwealth, including, but not limited to, clearing, grading, excavating, transporting, and filling of land, except that the term shall not include those exemptions as specified in §62.1-44.15:51 et seq.

#### Reference Documents and Guidance

All stormwater best management practices (BMPs) and ESC measures used in linear development projects will be constructed to meet or exceed the specifications in the Virginia stormwater BMPs clearinghouse and in the VESCH.

Nutrient management for all land-disturbing activities shall adhere to the specifications present in VDEQ ESC technical bulletin #4.

#### 4.1.1 VDEQ Oversight

In addition to Transco internal plan review, Transco may (at VDEQ's discretion) be required to submit individual project-specific plans to the VDEQ for review and approval.

The board and VDEQ shall have the authority to enforce approved specifications and charge fees equal to the lower of (i) \$1,000.00 or (ii) an amount sufficient to cover the costs associated with standard and specification review and approval, projection inspections, and compliance.

- Costs associated may include VDEQ plan review and inspection.

VDEQ is the authority and shall be performing random site inspections or inspections in response to a complaint to assure compliance with the associated laws/regulations and these AS&S.

VDEQ may take enforcement actions.

Transco projects will adhere to these requirements when specifically required by VDEQ on a project-specific basis.

Inspection reports conducted by Transco as well as complaint logs and complaint responses may be required to be submitted to VDEQ.

Transco may be required to provide weekly e-reporting to the department's applicable regional office including:

- Inspection reports;
- Pictures;
- Complaint logs and complaint responses; and
- Other compliance documents.

The project-specific plan, VDEQ approval, and supporting documents may be required to be posted on Transco's website for public view.

Transco will resubmit standards and specifications on a regular basis for VDEQ review and approval.

Details of borrow areas and support activities will be included with the two (2) week notice submitted to VDEQ.

## 4.2 Stormwater Management Plans and Waiver Requests

All projects that meet the below criteria are required to develop and maintain a SWM plan.

- a. Land disturbance area  $\geq$  2,500 sf. ft. in CBPA
- b. Land disturbance area  $\geq$  1 acre in non-CBPA

For projects requesting a waiver under guidance memo no. 15-2003, VDEQ requires a complete ESC plan and additional water quality calculations be submitted for review; this information must reasonably demonstrate that the project will not significantly change the pre-development runoff characteristics of the land surface after the completion of construction and final stabilization. If non significance is determined, then VDEQ, at their discretion, may waive the requirement for the preparation and implementation of a SWM plan.

For projects  $\geq 1$  acre, the construction of above ground or underground linear utilities may be conducted without requiring coverage under the general VPDES permit for discharges of stormwater from construction activities (construction general permit) provided that:

- a. The project does not significantly alter the pre-development runoff characteristics of the land surface after the completion of construction and final stabilization;
  - b. The disturbed land where work has been completed is adequately stabilized on a daily basis;
  - c. The environment is protected from erosion and sedimentation damage associated with the land-disturbing activity;
  - d. The owner and/or construction activity operator designs, installs, implements, and maintains pollution prevention measures to:
    - i. Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters;
    - ii. Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, and other materials present on-site to precipitation and to stormwater;
    - iii. Minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures;
    - iv. Prohibit the discharge of wastewater from the washout of concrete;
    - v. Prohibit the discharge of wastewater from the washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials; and
    - vi. Prohibit the discharge of fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance.
  - e. The owner and/or construction activity operator provides reasonable assurance to VDEQ or the local VSMP authority that all of the above conditions will be satisfied.
  - f. The above conditions shall be incorporated into the ESC plan developed for the project.
2. ESC plans and calculations shall be submitted to VDEQ's central office for review with a transmittal letter specifically requesting a SWM plan waiver. VDEQ will evaluate each project on an individual basis.

#### **4.2.1 Stormwater Nutrient Impacts and Mitigation**

For any project where the permanent land cover will change (regardless of square footage), stormwater nutrient impacts must be assessed using the Virginia runoff reduction method (VRRM) spreadsheet. Land cover under the VRRM, and therefore Virginia, is considered one of three options: impervious cover (includes graveled areas), managed turf (most mowed or landscaped areas including rights-of-way), and forested/open space (represents 'natural' conditions). The nutrient (total phosphorus) impact is calculated using the VRRM and the changes in the types of

land cover to determine a “pounds per year” unit. Those “pounds per year” impacts are then mitigated or off-set through the options summarized in the following subsections.

#### **4.2.1.1 Stormwater Best Management Practices (BMPs)**

Nutrient impacts may be off-set through the installation of stormwater BMPs. The BMPs would be selected and entered directly into the VRRM where the off-set/mitigation is calculated. The 15 non-proprietary BMPs approved by VDEQ are:

- Rooftop disconnection
- Sheetflow to conservation area/vegetated filter strip
- Grass channel
- Soil amendments
- Vegetated roof
- Rainwater harvesting
- Permeable pavement
- Infiltration
- Bioretention
- Dry swale
- Wet swale
- Filtering practice
- Constructed wetland
- Wet pond
- Extended detention pond

Typically, BMPs use is not an option for pipeline projects due to multiple land requirements (size, covenants, and ownership considerations) for the BMPs. This option should be considered for each project, however.

#### **4.2.1.2 Off-site Options**

Off-site compliance options in 9VAC25-870-69 may be utilized, as necessary, to meet the required phosphorus nutrient reductions and would be included in the SWM plan. The off-site compliance options may only be considered when the criteria set forth in 9VAC25-870-69 (Virginia Administrative Code 2020a) are met.

Pursuant to § 62.1-44.15:35 of the Code of Virginia, operators shall be allowed to utilize off-site options under any of the following conditions:

1. Less than five acres of land will be disturbed;
2. The post-construction phosphorus control requirement is less than 10 pounds per year; or
3. At least 75% of the required phosphorus nutrient reductions are achieved on-site. If at least 75% of the required phosphorus nutrient reductions cannot be met on-site, and the operator can demonstrate to the satisfaction of the VSMP authority that (i) alternative site designs have been considered that may accommodate on-site BMPs, (ii) on-site BMPs have been considered in alternative site designs to the maximum extent practicable, (iii) appropriate on-site BMPs will be implemented, and (iv) full compliance with post-development nonpoint nutrient runoff compliance requirements cannot practicably be met on-site, then the required phosphorus nutrient reductions may be achieved, in whole or in part, through the use of off-site compliance options.

Off-site options must be obtained/documented to VDEQ prior to the commencement of the land-disturbing activity. In the case of a phased project, Transco may acquire or achieve off-site nutrient reductions prior to the commencement of each phase of land-disturbing activity in an amount sufficient for each phase.

### **Land Purchase**

Off-site properties may be utilized to off-set nutrient impacts. Separate parcels/tracts of land can be conserved by titling or deed restricting the land from development. Such parcels would need to conserve an equal or greater amount of nutrient impact to that of the project and also be located within the existing or adjoining hydrologic unit code (HUC) 8 watershed. This would typically be completed by Transco purchasing the land and placing preservation language in the documents that 'run with the land'.

### **Nutrient Credits Purchases**

Nutrient credits can be purchased through a nutrient credit bank with the existing HUC 8 watershed, or an adjoining watershed. For projects where nutrient credits are purchased, Transco will reach out to local nutrient banks to determine availability. When credits are located, a letter of availability will be acquired and be presented to VDEQ (on a case by case basis) for review. Upon confirmation of availability (and in appropriate cases, approval from VDEQ), Transco will enter a contract with the nutrient bank to purchase the credits. Upon completion of the contract and transfer of funds (purchase), Transco will be provided with an affidavit of sale from the nutrient bank consummating the transaction. Once the transaction is complete, the project is free to begin - from the perspective of addressing the project's stormwater impacts.

For projects whose land disturbance exceeds five (5) acres, nutrient credits can only be utilized to off-set a portion of the impact unless an Exception Request is approved by VDEQ (see Section 5.2.4). That percentage should be confirmed with VDEQ prior to completing the stormwater review for the project.

While purchasing nutrient credits focuses on stormwater quality, Minimum Standard 19 under the Virginia Stormwater Management Act provides criteria on stormwater quantity and adequate channels downstream of a construction site. This minimum standard protects downstream impacts such as sediment deposition, erosion, and damage due to increases in volume, velocity, and peak flow rate from stormwater runoff.

#### **4.2.1.3 Stormwater Exception Request**

The post-construction land cover conditions are used in determining anticipated stormwater quality alterations under the Virginia Stormwater Management Program Regulations (9VAC 25-870) through the use of the VRRM spreadsheet. When off-site options (e.g. nutrient credits) are not available, or when total phosphorus (TP) load reductions calculated in VRRM cannot be reduced to allowable levels (10 pounds TP per year) for off-site nutrient credit purchases, on-site mitigation may be required. On-site mitigation for stormwater quality alterations can be achieved through measures such as Best Management Practices (BMPs) or land management methods following construction including decompaction, establishing specific vegetative covers, etc., that combine to mimic forested open space hydraulic conditions.

Being only an easement holder, Transco is not often the fee owner of the properties along the ROW, but existing easement agreements allow Transco to maintain and perform inspections along the ROW. Those easement agreements include provisions that allow the landowners to

utilize the pipeline ROW on their privately-owned property for numerous non-intrusive activities. In these situations, Transco is not able to guarantee post-construction land covers throughout the ROW as those restrictions would constrain landowner activities, thereby effectively eliminating on-site mitigation options.

In scenarios where on-site mitigation options are not available, AND off-site options are either not available or exceed the allowable 10 pounds TP per year limitation in Virginia, a stormwater exception request to 9VAC25-870-69 subsection B may be submitted to VDEQ to seek relief of the 10 pound maximum. The stormwater exception requests should:

- Describe the project and details of construction impacts (temporary and permanent),
- Describe and provide the VRRM spreadsheet outlining the TP (or other nutrient) calculations,
- Describe how Transco will restore and manage the ROW in the post-construction setting under their easement, separate from any landowner actions; and,
- Describe the limitations or impediments eliminating the use of traditional means of off-setting stormwater impacts.

### **4.3 9VAC25-870-112 Long-term Maintenance of Permanent Stormwater Management Facilities**

The Transco authority shall require the provision of long-term responsibility for and maintenance of SWM facilities (e.g. BMPs) and other techniques (e.g. off-site land purchases) specified to manage the quality and quantity of runoff (Virginia Administrative Code 2020c). Such requirements shall be set forth in an instrument recorded in the local land records prior to state permit termination or earlier as required:

- Be submitted to the VSMP authority for review and approval prior to the approval of the SWM plan;
- Be stated to run with the land;
- Provide for all necessary access to the property for purposes of maintenance and regulatory inspections;
- Provide for inspections and maintenance and the submission of inspection and maintenance reports to the VSMP authority; and
- Be enforceable by all appropriate governmental parties.

At the discretion of the VSMP authority, such recorded instruments need not be required for SWM facilities designed to treat stormwater runoff primarily from an individual residential lot on which they are located, provided it is demonstrated to the satisfaction of the VSMP authority that future maintenance of such facilities will be addressed through an enforceable mechanism at the discretion of the VSMP authority.

Transco will serve as the entity responsible for long term maintenance of the utility ROW. Agreements concerning utility ROW and BMPs maintenance will be available at the request of VDEQ.



## 4.4 9VAC25-840-50 Variance and Deviation Requests

### 4.4.1 Variance Requests

Variance requests will be considered freestanding of this AS&S submission and on a site-specific basis. Variance and Deviations requests will primarily written for Minimum Standards and ESC Measures.

The VDEQ authority may waive or modify any of the requirements that are deemed inappropriate or too restrictive for site conditions, by granting a variance (Virginia Administrative Code 2020d). A variance may be granted under these conditions:

1. At the time of plan submission, Transco may request a variance to become part of the approved erosion and sediment control plan. The applicant shall explain the reasons for requesting variances in writing. Specific variances which are allowed by the VESCP authority shall be documented in the plan.
2. During construction, the Transco staff responsible for implementing the approved plan may request a variance in writing from the VESCP authority. The VESCP authority shall respond in writing either approving or disapproving such a request. If the VESCP authority does not approve a variance within ten (10) days of receipt of the request, the request shall be considered to be disapproved. Following disapproval, the applicant may resubmit a variance request with additional documentation.
3. The VESCP authority shall consider variance requests judiciously, keeping in mind both the need of the applicant to maximize cost effectiveness and the need to protect off-site properties and resources from damage.
4. In accordance with VDEQ guidance memo no. 15-2003, if the project will not result in significant changes to the pre-development runoff characteristics of the land surface after the completion of construction and final stabilization, then VDEQ, at their discretion, may waive the requirement for the preparation and implementation of a SWM plan.

#### 4.4.1.1 Variance Request Submittals

All variance requests submitted to VDEQ shall include the following:

- a. Introduction
- b. Project description
- c. Description of what minimum standard variance is requested
- d. Existing conditions and adjacent areas
- e. Soil characterization
- f. Critical and sensitive areas
- g. Mitigation strategies for:
  - i. ESC measures
  - ii. Permanent stabilization
  - iii. Vegetative restoration
  - iv. Maintenance

v. Critical and sensitive areas

h. Plans for self-inspection, reporting, and use of VDEQ certified personnel

#### 4.1.2 Deviation Requests

Deviations from technical guidance documents that have been approved by VDEQ for alterations to existing practices or additional practices should be catalogued with these AS&S and be incorporated into future revisions to the AS&S, if applicable. Both the deviation request and the approval letter should be inserted in an appendix, upon approval. The process for submitting a Deviation Request is outlined in Section 5.4.

### 4.5 9VAC25-840-60 Maintenance and Inspections

Prior to approval by the VDEQ certified plan reviewer, Transco will ensure each site-specific ESC (and SWM plan when applicable) meets the requirements set in these AS&S. Once a project has started, VDEQ certified ESC (and SWM, when applicable) inspectors will conduct the following:

- ESC Periodic Inspection – (DEQ-Certified ESC Inspector)
  - 9VAC25-840-60 (Virginia Administrative Code 2020b). Periodic inspections are required on all regulated land-disturbing projects. Transco shall:
    - Provide for an inspection during or immediately following initial installation of erosion and sediment controls,
    - at least once in every two-week period,
    - within 48 hours following any runoff producing storm event,
    - and at the completion of the project prior to the release of any performance bonds.
- SWM Periodic Inspection – (DEQ-Certified SWM Inspector)
  - § 62.1-44.15:37. A. Transco (i) will provide for periodic inspections of the installation of stormwater management measures, (ii) may require monitoring and reports from the person responsible for meeting the permit conditions to ensure compliance with the permit and to determine whether the measures required in the permit provide effective stormwater management, and (iii) shall conduct such investigations and perform such other actions as are necessary to carry out the provisions of these AS&S.
  - 9VAC25-870-114. A. Transco will inspect the land-disturbing activity during construction for:
    - Compliance with the approved erosion and sediment control plan;
    - Compliance with the approved stormwater management plan;
    - Development, updating, and implementation of a pollution prevention plan; and
    - Development and implementation of any additional control measures necessary to address a total maximum daily load (TMDL).

As part of the inspection, the qualified personnel shall:

- Record the date and time of the inspection and when applicable the date and rainfall amount of the last measurable storm event.
- Record the information and a description of any discharges occurring at the time of the inspection.
- Record any land-disturbing activities that have occurred outside of the approved ESC plan.
- Inspect the following for installation in accordance with the approved ESC plan, identification of any maintenance needs, and evaluation of effectiveness in minimizing sediment discharge, including whether the control has been inappropriately or incorrectly used:
  - All perimeter ESC controls, such as silt fence;
  - Soil stockpiles, when applicable, and borrow areas for stabilization or sediment trapping measures;
  - Completed earthen structures, such as dams, dikes, ditches, and diversions for stabilization;
  - Cut and fill slopes;
  - Sediment basins and traps, sediment barriers, and other measures installed to control sediment discharge from stormwater;
  - Temporary or permanent channel, flume, or other slope drain structures installed to convey concentrated runoff down cut and fill slopes;
  - Storm inlets that have been made operational to ensure that sediment laden stormwater does not enter without first being filtered or similarly treated; and
  - Construction vehicle access routes that intersect or access paved roads for minimizing sediment tracking.
- Inspect areas that have reached final grade that will remain dormant for more than fourteen (14) days for initiation of stabilization activities.
- Inspect areas that have reached final grade or that will remain dormant for more than fourteen (14) days for completion of stabilization activities within seven (7) days of reaching grade or stopping work.
- Inspect for evidence that the approved ESC plan or "agreement in lieu of a plan" has not been properly implemented. This includes but is not limited to:
  - Concentrated flows of stormwater in conveyances such as rills, rivulets, or channels that have not been filtered, settled, or similarly treated prior to discharge, or evidence thereof;
  - Sediment laden or turbid flows of stormwater that have not been filtered or settled to remove sediments prior to discharge;
  - Sediment deposition in areas that drain to unprotected stormwater inlets or catch basins that discharge to surface waters. Inlets and catch basins with failing

sediments controls due to improper installation, lack of maintenance, or inadequate design are considered unprotected;

- Sediment deposition on any property (including public and private streets) outside of the construction activity covered by this AS&S;
- Required stabilization has not been initiated or completed on portions of the site;
- Sediment basins without adequate wet or dry storage volume or sediment basins that allow the discharge of stormwater from below the surface of the wet storage portion of the basin;
- Sediment traps without adequate wet or dry storage or sediment traps that allow the discharge of stormwater from below the surface of the wet storage portion of the trap; and
- Land disturbance outside of the approved area to be disturbed.

- Inspect pollutant generating activities identified in the pollution prevention plan for the proper implementation, maintenance and effectiveness of the procedures and practices.
- Identify pollutant generating activities identified in the pollution prevention plan for the proper implementation, maintenance, and effectiveness of the procedures and practices.
- Identify and document the presence of any evidence of the discharge of pollutants prohibited by this AS&S.

At the completion of the inspection, the qualified personnel shall:

- Identify any on-site changes that are a non-compliance.
- Identify corrective actions necessary for remediation, and populate the necessary information on the inspection report.
- Initiate corrective actions as soon as practicable but no later than seven days after discovery or a longer period as approved by the VSMP authority. Corrective actions are further described in Section 4.6.

An ESC and SWM Inspection Report Template is provided as in Appendix R.

## 4.6 Stormwater Pollution Prevention Plans

Per 9VAC25-870-380.A.2., DEQ may not require a CGP for the oil and gas work further detailed in the referenced section. However, projects covered under these AS&S with  $\geq 1$  acre of land disturbance (or part of a common plan of development) are required to have a SWPPP that is consistent with 9VAC25-880.

Each SWPPP will contain the ESC plan, SWM plan, a pollution prevention section, and additional regulatory requirements associated with the project (e.g., permits, federal/state/local clearances). Per 9VAC25-880-70 Part II B, all SWPPPs should include the following:

- General Information;
- ESC Plan;
- SWM Plan;
- Pollution Prevention Plan;

- SWPPP Requirements for discharges to nutrient and sediment impaired waters;
- SWPPP Requirements for discharges to polychlorinated biphenyl (PCB) impaired waters; and
- SWPPP will contain additional regulatory requirements associated with the project (e.g., permits, federal/state/local clearances).

SWPPP requirements shall be inspected and maintained per 9VAC25-880-70 Part II G as follows:

- Inspections of the SWPPP shall be conducted by qualified personnel.
- For construction activities that discharge to a surface water identified in Part II B 5 and B 6 as impaired or having an approved TMDL or Part II B 7 as exceptional, the following inspection schedule requirements apply:
  - Inspections shall be conducted at a frequency of (i) at least once every four business days or (ii) at least once every five business days and no later than 24 hours following a measurable storm event. In the event that a measurable storm event occurs when there are more than 24 hours between business days, the inspection shall be conducted on the next business day; and
- Representative inspections as authorized in Part II G 2 d shall not be allowed.
- Except as specified in Part II G 2 a, inspections shall be conducted at a frequency of:
  - At least once every five business days; or
  - At least once every 10 business days and no later than 24 hours following a measurable storm event. In the event that a measurable storm event occurs when there are more than 24 hours between business days, the inspection shall be conducted on the next business day.
- Corrective actions shall be conducted in accordance with Part II H:
  - The operator shall initiate the corrective actions identified as a result of an inspection as soon as practicable but no later than seven days after discovery or a longer period as approved by the VSMP authority. If approval of a corrective action by a regulatory authority (e.g., VSMP authority, VESCP authority, or the department) is necessary, additional control measures shall be implemented to minimize pollutants in stormwater discharges until such approvals can be obtained.
- The operator may be required to remove accumulated sediment deposits located outside of the construction activity covered by this general permit as soon as practicable in order to minimize environmental impacts. The operator shall notify the VSMP authority and the department as well as obtain all applicable federal, state, and local authorizations, approvals, and permits prior to the removal of sediments accumulated in surface waters including wetlands. An ESC plan consistent with the requirements of the Virginia ESC law and regulations must be designed and implemented during construction activities. prior to land disturbance, this plan must be approved by a Virginia professional engineer (P.E.), professional soil scientist, landscape architect, architect, or a Virginia certified ESC plan reviewer, and if necessary VDEQ, in accordance with the Virginia ESC law and attendant regulations.

A SWM plan consistent with the requirements of the Virginia SWM act and regulations must be designed and implemented during construction activities. Prior to land disturbance, this plan must be approved by a Virginia certified stormwater management plan reviewer, and if necessary, by a VDEQ certified plan reviewer, in accordance with the Virginia stormwater management act and other attendant regulations.

A pollution prevention plan that identifies potential sources of pollutants that may reasonably be expected to affect the quality of stormwater discharges from the construction site and describe control measures that will be used to minimize pollutants in stormwater discharges from the construction site. This plan must be developed before land disturbance commences. For plans where SWM plans are not required, pollution prevention plan language will be added to the site-specific ESC plan for the project.

In addition to the requirements of subsection a through d of this section, if a specific waste load allocation (WLA) for a pollutant has been established in an approved TMDL and is assigned to stormwater discharges from a construction activity, additional control measures must be identified and implemented by the operator so that discharges are consistent with the assumptions and requirements of the WLA.

The SWPPP must address the following requirements as specified in 40 CFR 450.21, to the extent otherwise required by state law or regulations and any applicable requirements of a state permit:

- a. Control stormwater volume and velocity within the site to minimize soil erosion in order to minimize pollutant discharges;
- b. Control stormwater discharges, including both peak flow rates and total stormwater volume, to minimize downstream channel and stream bank erosion and scour in the immediate vicinity of discharge points;
- c. Minimize the amount of soil exposed during construction activity;
- d. Minimize the disturbance of steep slopes;
- e. Minimize sediment discharges from the site. The design, installation, and maintenance of ESC measures must address factors such as the amount, frequency, intensity, and duration of precipitation, the nature of resulting stormwater runoff, and soil characteristics, including the range of soil characteristics, including the range of soil particle sizes expected to be present on the site;
- f. Provide and maintain natural buffers around surface waters, direct stormwater to vegetated areas to increase sediment removal and maximize stormwater infiltration, unless infeasible;
- g. Minimize soil compaction and, unless infeasible, preserve topsoil;
- h. Stabilization of disturbed areas must, at a minimum, be initiated immediately whenever any clearing, grading, excavating, or other earth disturbing activities have permanently ceased on any portion of the site, or temporarily ceased on any portion of the site and will not resume for a period exceeding fourteen (14) calendar days. Stabilization must be completed within a period of time determined by the VSMP authority. In arid, semi-arid, and drought-stricken areas where initiating vegetative stabilization measures immediately is infeasible, alternative stabilization measures must be employed as specified by the VSMP authority;
- i. Discharges from dewatering activities, including discharges from dewatering of trenches and excavations, are prohibited unless managed by appropriate controls;
- j. Design, install, implement, and maintain effective pollution prevention measures to minimize the discharge of pollutants. At a minimum, such measures must be designed, installed, implemented and maintained to:
  - i. Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must

- be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;
- ii. Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use); and
  - iii. Minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures.
- k. Utilize outlet structures that withdraw water from the surface, unless infeasible, when discharging from basins or impoundments.
- i. The following discharges are prohibited:
    - Wastewater from washout of concrete, unless managed by an appropriate control;
    - Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;
    - Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance; and
    - Soaps or solvents used in vehicle and equipment washing.

The SWPPP shall be amended whenever there is a change in design, construction, operation, or maintenance that has significant effect on the discharge of pollutants to state waters and that has not been previously addressed in the SWPPP. The SWPPP must be maintained at a central location on-site. If an on-site location is unavailable, notice of the SWPPP's location must be posted near the main entrance of the construction site.

## 4.7 Non-VESCH Control Measures

The use of VESCH control measures, along with accompanying technical documents and guidance, is strongly preferred. Non-VESCH ESC measures, BMPs, and specifications are included in this AS&S submission, but their use may be further reviewed and approved by VDEQ on a project specific basis. The following Non-VESCH ESC measures and manufacturer data sheets are provided as attachments to this AS&S:

- Appendix A Diversion Fence (DF)
- Appendix B Super Silt Fence (SSF)
- Appendix C Rock Filter Outlet (RFO)
- Appendix D Filter Bag (FB)
- Appendix E Compost Filter Sock (CFS)
- Appendix F Wash Rack Option
- Appendix G Cofferdam Crossing
- Appendix H Dam and Pump Crossing
- Appendix I Flume Crossing
- Appendix J Timber Mat Construction Entrance (Limited Use)
- Appendix K CFS Manufacturer Data Sheet

- Appendix L Diversion Filter Sock (DFS) Manufacturer Data Sheet
- Appendix M Slope Stabilization Manufacturer Data Sheet

This AS&S includes by reference all VESCH specifications and related technical documents and guidance specifications. Approved VESCH specifications and approved deviation requests to VESCH specifications will be followed by Transco.

For all non-VESCH and proprietary control measures not currently included in the AS&S or on the Deviation Request Log (Appendix S), a Deviation Request to VDEQ must be made with submittal of the project two-week notification as noted in Section 4.4. The Deviation Request will consist of all applicable practical information including:

- definition,
- purpose,
- conditions where practice applies,
- planning considerations,
- design criteria,
- construction specifications,
- design tables and plates, and
- maintenance and inspections.

Non-VESCH and proprietary control measures shall be installed per the manufacturer's instructions and with the intent of the VESCH specifications.

Should non-VESCH control measures fail to effectively control soil erosion, sediment deposition, and non-agricultural runoff, then VESCH control measures shall be utilized.

## 4.8 Project Completion

When the construction activity has been completed and the site is restored to Minimum Standard 3, final inspection reports should be documented and maintained in accordance with Section 5.1. When a project is subject to regular inspection reporting the VDEQ (e.g. projects with approved Variance Requests), final inspection of the site by VDEQ may be required. In such cases, the project inspections will not cease until VDEQ conducts their final inspection and provides written or electronic documentation of satisfactory completion. If required by VDEQ, a Notice of Termination (NOT) form can be submitted for project termination.



## 5. TRANSCO INTERNAL REVIEW CHECKLIST

Transco contracts out inspection and plan reviewers through a Master Service Agreement, but all individuals report to a Transco representative. Transco is working toward acquiring the certification of program administrator from VDEQ. Transco will utilize an internal or contracted third party VDEQ certified plan reviewer or combined administrator for review of ESC and SWM plans. VDEQ certified personnel will serve to protect the quality and quantity of state waters from the potential harm of unmanaged stormwater before, during, and after construction. Transco will employ the use of the VDEQ ESC and SWM checklists to ensure that all ESC and SWM plans meet the requirements set in 9VAC25-840 and 9VAC25-870.

Transco will ensure that VDEQ certifications are renewed and will hold VDEQ certified personnel accountable for plan review, site inspection, and other responsibilities as they are required. Requirement and responsibilities are as follows:

- Program Administrator: individual who holds a certificate of competence from the Board in the area of program administrator or is enrolled in the Board's training program for program administrator and successfully completes such program within one year after enrollment. The program administrator ensures plan review, approval, inspections, and enforcements are being properly conducted, as well as reporting, record keeping, fee collections, and ordinance updates. The Program Administrator will be an employee of Transco.
- Inspector: individual who holds a certificate of competence from the Board in the area of project inspection or is enrolled in the Board's training program for project inspection and successfully completes such program within one year after enrollment. The inspector conducts periodic inspection of active construction sites to ensure proper installation, construction, and function of BMPs and other ESC measures. Responsibilities also include inspection of documents, initiation of enforcement when needed, and safeguard of compliance to correct deficiencies or violations.
- Plan Reviewer: individual who holds a certificate of competence from the Board in the area of plan review, is enrolled in the Board's training program for plan review and successfully completes such program within one year after enrollment, or is licensed as professional engineer, architect, landscape architect, land surveyor, or professional soil scientist. The plan reviewer reviews ESC or SWM plans to ensure they adhere to the VESC Regulations, ESC Handbook, and local ordinance(s).

Projects will operate under these annual specifications and standards, or under the project's own site-specific ESC and SWM plans. VDEQ certified inspectors will confirm adherence to these plans while conducting site inspections, and the project manager for the individual project will be held responsible for maintaining and observing the guidance set in these specifications.

### 5.1 9VAC25-870-126 Reports and Record Keeping

Transco shall keep records in accordance with the following:

Project records, including approved SWM plans, shall be kept for three (3) years after state permit termination or project completion.

41 SWM facility inspection records shall be documented and retained for at least five (5) years from  
42 the date of inspection.

43 Construction record drawings shall be maintained in perpetuity or until a SWM facility is removed.

44 The AS&S holder shall maintain, either on-site or in AS&S files, a copy of the approved ESC plan  
45 and a record of inspections for each active land-disturbing activity. A log of approved alterations  
46 to the ESC plans (redlines) will be maintained as a section of the SWPPP document, or in an  
47 attachment to the appropriate ESC plan.

## 6. WETLAND AND WATERBODY CONSTRUCTION AND MITIGATION PROCEDURES (FERC REQUIREMENTS)

The Federal Energy Regulatory Commission (FERC) provides general industry guidance for pipeline construction across wetlands and waterbodies for FERC-regulated projects in the *FERC Wetland and Waterbody Construction and Mitigation Procedures* (FERC Procedures). FERC accepts modifications to the FERC Procedures when the modifications provide clarification or identify measures that provide equal or greater environmental protections than those identified in the FERC Procedures. Transco will propose modifications to the FERC Procedures where Virginia requirements provide for equal or greater environmental protections than the FERC Procedures. The modifications that will be proposed for FERC approval are summarized in the table that follows.

Modifications to the FERC Upland Erosion Control, Revegetation, and Maintenance Procedures (Virginia)		
Section	FERC Version <sup>a</sup>	Revision (Virginia)
V.B.7	Where a dry-ditch crossing is not required, minor waterbodies may be crossed using the open-cut crossing method, with the following restrictions:	Wet-open crossings are not permitted in Virginia; Remove reference to wet-open crossings of waterbodies.
V.B.8	Where a dry-ditch crossing is not required, intermediate waterbodies may be crossed using the open-cut crossing method, with the following restrictions	
V.C.2	For open-cut crossings, stabilize waterbody banks and install temporary sediment barriers within 24 hours of completing instream construction activities.	
a – May 2013 FERC Wetland and Waterbody Construction and Mitigation Procedures		

### I. Applicability

A. Once a project is authorized, project sponsors can request further changes as variances to the measures in these Procedures (or the applicant's approved procedures). The Director of the Office of Energy Projects (Director) will consider approval of variances upon the project sponsor's written request, if the Director agrees that a variance:

1. provides equal or better environmental protection;
2. is necessary because a portion of these Procedures is infeasible or unworkable based on project-specific conditions; or
3. is specifically required in writing by another federal, state, or Native American land management agency for the portion of the project on its land or under its jurisdiction.

Sponsors of projects planned for construction under the automatic authorization provisions in the FERC's regulations must receive written approval for any variances in advance of construction.

Project-related impacts on non-wetland areas are addressed in the staff's Upland Erosion Control, Revegetation, and Maintenance Plan (Plan).

## B. Definitions

1. "Waterbody" includes any natural or artificial stream, river, or drainage with perceptible flow at the time of crossing, and other permanent waterbodies such as ponds and lakes:
  - a. "minor waterbody" includes all waterbodies less than or equal to 10 feet wide at the water's edge at the time of construction;
  - b. "intermediate waterbody" includes all waterbodies greater than 10 feet wide but less than or equal to 100 feet wide at the water's edge at the time of crossing; and
  - c. "major waterbody" includes all waterbodies greater than 100 feet wide at the water's edge at the time of crossing.
2. "Wetland" includes any area that is not in actively cultivated or rotated cropland and that satisfies the requirements of the current federal methodology for identifying and delineating wetlands.

## II. Pre-construction Filing

- A. The following information must be filed with the Secretary of the FERC (Secretary) prior to the beginning of construction, for the review and written approval by the Director:
  1. Site-specific justifications for extra work areas that would be closer than 50 feet from a waterbody or wetland; and
  2. Site-specific justifications for the use of a construction right-of-way greater than 75-feet-wide in wetlands.
- B. The following information must be filed with the Secretary prior to the beginning of construction. These filing requirements do not apply to projects constructed under the automatic authorization provisions in the FERC's regulations:
  1. Spill Prevention and Response Procedures specified in section IV.A;
  2. A schedule identifying when trenching or blasting will occur within each waterbody greater than 10 feet wide, within any designated coldwater fishery, and within any waterbody identified as habitat for federally-listed threatened or endangered species. The project sponsor will revise the schedule as necessary to provide FERC staff at least 14 days advance notice. Changes within this last 14-day period must provide for at least 48 hours advance notice;
  3. Plans for horizontal directional drills (HDD) under wetlands or waterbodies, specified in section V.B.6.d;

4. Site-specific plans for major waterbody crossings, described in section V.B.9;
5. A wetland delineation report as described in section VI.A.1, if applicable; and
6. The hydrostatic testing information specified in section VII.B.3.

### III. Environmental Inspections

- A. At least one Environmental Inspector having knowledge of the wetland and waterbody conditions in the project area is required for each construction spread. The number and experience of Environmental Inspectors assigned to each construction spread shall be appropriate for the length of the construction spread and the number/significance of resources affected.
- B. The Environmental Inspector's responsibilities are outlined in the Upland Erosion Control, Revegetation, and Maintenance Plan (Plan).

### IV. Pre-construction Planning

- A. The project sponsor shall develop project-specific Spill Prevention and Response Procedures that meet applicable requirements of state and federal agencies. A copy must be filed with the Secretary prior to construction and made available in the field on each construction spread. This filing requirement does not apply to projects constructed under the automatic authorization provisions in the FERC's regulations.
  1. It shall be the responsibility of the project sponsor and its contractors to structure their operations in a manner that reduces the risk of spills or the accidental exposure of fuels or hazardous materials to waterbodies or wetlands. The project sponsor and its contractors must, at a minimum, ensure that:
    - a. all employees handling fuels and other hazardous materials are properly trained;
    - b. all equipment is in good operating order and inspected on a regular basis;
    - c. Fuel trucks transporting fuel to on-site equipment travel on approved access roads;
    - d. all equipment is parked overnight and/or fueled at least 100 feet from a waterbody or in an upland area at least 100 feet from a wetland. These activities can occur closer only if the Environmental Inspector determines that there is no reasonable alternative, and the project sponsor and its contractors have taken appropriate steps (including secondary containment structures) to prevent spills and provide for prompt cleanup in the event of a spill;

- e. hazardous materials, including chemicals, fuels, and lubricating oils, are not stored within 100 feet of a wetland, waterbody, or designated municipal watershed area, unless the location is designated for such use by an appropriate governmental authority. This applies to storage of these materials and does not apply to normal operation or use of equipment in these areas;
  - f. concrete coating activities are not performed within 100 feet of a wetland or waterbody boundary, unless the location is an existing industrial site designated for such use. These activities can occur closer only if the Environmental Inspector determines that there is no reasonable alternative, and the project sponsor and its contractors have taken appropriate steps (including secondary containment structures) to prevent spills and provide for prompt cleanup in the event of a spill;
  - g. pumps operating within 100 feet of a waterbody or wetland boundary utilize appropriate secondary containment systems to prevent spills; and
  - h. bulk storage of hazardous materials, including chemicals, fuels, and lubricating oils have appropriate secondary containment systems to prevent spills.
2. The project sponsor and its contractors must structure their operations in a manner that provides for the prompt and effective cleanup of spills of fuel and other hazardous materials. At a minimum, the project sponsor and its contractors must:
- a. ensure that each construction crew (including cleanup crews) has on hand sufficient supplies of absorbent and barrier materials to allow the rapid containment and recovery of spilled materials and knows the procedure for reporting spills and unanticipated discoveries of contamination;
  - b. ensure that each construction crew has on hand sufficient tools and material to stop leaks;
  - c. know the contact names and telephone numbers for all local, state, and federal agencies (including, if necessary, the U. S. Coast Guard and the National Response Center) that must be notified of a spill; and
  - d. follow the requirements of those agencies in cleaning up the spill, in excavating and disposing of soils or other materials contaminated by a spill, and in collecting and disposing of waste generated during spill cleanup.

B. Agency Coordination

The project sponsor must coordinate with the appropriate local, state, and federal agencies as outlined in these Procedures and in the FERC's Orders.

## V. Waterbody Crossings

A. Notification Procedures and Permits

1. Apply to the U.S. Army Corps of Engineers (COE), or its delegated agency, for the appropriate wetland and waterbody crossing permits.
2. Provide written notification to authorities responsible for potable surface water supply intakes located within 3 miles downstream of the crossing at least 1 week before beginning work in the waterbody, or as otherwise specified by that authority.
3. Apply for state-issued waterbody crossing permits and obtain individual or generic section 401 water quality certification or waiver.
4. Notify appropriate federal and state authorities at least 48 hours before beginning trenching or blasting within the waterbody, or as specified in applicable permits.

B. Installation

1. Time Window for Construction

Unless expressly permitted or further restricted by the appropriate federal or state agency in writing on a site-specific basis, instream work, except that required to install or remove equipment bridges, must occur during the following time windows:

- a. coldwater fisheries - June 1 through September 30; and
- b. coolwater and warmwater fisheries - June 1 through November 30.

2. Extra Work Areas

- a. Locate all extra work areas (such as staging areas and additional spoil storage areas) at least 50 feet away from water's edge.
- b. The project sponsor shall file with the Secretary for review and written approval by the Director, site-specific justification for each extra work area with a less than 50-foot setback from the water's edge, except where the adjacent upland consists of cultivated or rotated cropland or other disturbed land. The justification must specify the conditions that will not permit a 50-foot setback and measures to ensure the waterbody is adequately protected.

- c. Limit the size of extra work areas to the minimum needed to construct the waterbody crossing.

### 3. General Crossing Procedures

- a. Comply with the COE, or its delegated agency, permit terms and conditions.
- b. Construct crossings as close to perpendicular to the axis of the waterbody channel as engineering and routing conditions permit.
- c. Where pipelines parallel a waterbody, maintain at least 15 feet of undisturbed vegetation between the waterbody (and any adjacent wetland) and the construction right-of-way, except where maintaining this offset will result in greater environmental impact.
- d. Where waterbodies meander or have multiple channels, route the pipeline to minimize the number of waterbody crossings.
- e. Maintain adequate waterbody flow rates to protect aquatic life, and prevent the interruption of existing downstream uses.
- f. Waterbody buffers (e.g., extra work area setbacks, refueling restrictions) must be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete.
- g. Crossing of waterbodies when they are dry or frozen and not flowing may proceed using standard upland construction techniques in accordance with the Plan, provided that the Environmental Inspector verifies that water is unlikely to flow between initial disturbance and final stabilization of the feature. In the event of perceptible flow, the project sponsor must comply with all applicable Procedure requirements for “waterbodies” as defined in section I.B.1.

### 4. Spoil Pile Placement and Control

- a. All spoil from minor and intermediate waterbody crossings, and upland spoil from major waterbody crossings, must be placed in the construction right-of-way at least 10 feet from the water’s edge, or in additional extra work areas as described in section V.B.2.
- b. Use sediment barriers to prevent the flow of spoil or silt-laden water into any waterbody



## 5. Equipment Bridges

a. Only clearing equipment and equipment necessary for installation of equipment bridges may cross waterbodies prior to bridge installation. Limit the number of such crossings of each waterbody to one per piece of clearing equipment.

b. Construct and maintain equipment bridges to allow unrestricted flow and to prevent soil from entering the waterbody. Examples of such bridges include:

(1) equipment pads and culvert(s);

(2) equipment pads or railroad car bridges without culverts;

(3) clean rock fill and culvert(s); and

(4) flexi-float or portable bridges.

Additional options for equipment bridges may be utilized that achieve the performance objectives noted above. Do not use soil to construct or stabilize equipment bridges.

c. Design and maintain each equipment bridge to withstand and pass the highest flow expected to occur while the bridge is in place. Align culverts to prevent bank erosion or streambed scour. If necessary, install energy-dissipating devices downstream of the culverts.

d. Design and maintain equipment bridges to prevent soil from entering the waterbody.

e. Remove temporary equipment bridges as soon as practicable after permanent seeding.

f. If there will be more than 1 month between final cleanup and the beginning of permanent seeding and reasonable alternative access to the right-of-way is available, remove temporary equipment bridges as soon as practicable after final cleanup.

g. Obtain any necessary approval from the COE, or the appropriate state agency for permanent bridges.

## 6. Dry-Ditch Crossing Methods

a. Unless approved otherwise by the appropriate federal or state agency, install the pipeline using one of the dry-ditch methods outlined below for crossings of waterbodies up to 30 feet wide (at the water's edge at the time of construction) that are state-designated as either coldwater or significant coolwater or warmwater fisheries, or federally- designated as critical habitat.

b. Dam and Pump

- (1) The dam and pump method may be used without prior approval for crossings of waterbodies where pumps can adequately transfer streamflow volumes around the work area, and there are no concerns about sensitive species passage.
- (2) Implementation of the dam and pump crossing method must meet the following performance criteria:
  - (i) use sufficient pumps, including on-site backup pumps, to maintain downstream flows;
  - (ii) construct dams with materials that prevent sediment and other pollutants from entering the waterbody (e.g., sandbags or clean gravel with plastic liner);
  - (iii) screen pump intakes to minimize entrainment of fish;
  - (iv) prevent streambed scour at pump discharge; and
  - (v) continuously monitor the dam and pumps to ensure proper operation throughout the waterbody crossing.

c. Flume Crossing

The flume crossing method requires implementation of the following steps:

- (1) install flume pipe after blasting (if necessary), but before any trenching;
- (2) use sand bag or sand bag and plastic sheeting diversion structure or equivalent to develop an effective seal and to divert stream flow through the flume pipe (some modifications to the stream bottom may be required to achieve an effective seal);
- (3) properly align flume pipe(s) to prevent bank erosion and streambed scour;
- (4) do not remove flume pipe during trenching, pipelaying, or backfilling activities, or initial streambed restoration efforts; and
- (5) remove all flume pipes and dams that are not also part of the equipment bridge as soon as final cleanup of the stream bed and bank is complete.

d. Horizontal Directional Drill

For each waterbody or wetland that would be crossed using the HDD method, file with the Secretary for the review and written approval by the Director, a plan that includes:

- (1) site-specific construction diagrams that show the location of mud pits, pipe assembly areas, and all areas to be disturbed or cleared for construction;
- (2) justification that disturbed areas are limited to the minimum needed to construct the crossing;
- (3) identification of any aboveground disturbance or clearing between the HDD entry and exit workspaces during construction;
- (4) a description of how an inadvertent release of drilling mud would be contained and cleaned up; and
- (5) a contingency plan for crossing the waterbody or wetland in the event the HDD is unsuccessful and how the abandoned drill hole would be sealed, if necessary.

The requirement to file HDD plans does not apply to projects constructed under the automatic authorization provisions in the FERC's regulations.

7. Crossings of Minor Waterbodies

Where a dry-ditch crossing is not required, minor waterbodies may be crossed using the open-cut crossing method, with the following restrictions:

- a. except for blasting and other rock breaking measures, complete instream construction activities (including trenching, pipe installation, backfill, and restoration of the streambed contours) within 24 hours. Streambanks and unconsolidated streambeds may require additional restoration after this period;
- b. limit use of equipment operating in the waterbody to that needed to construct the crossing; and
- c. equipment bridges are not required at minor waterbodies that do not have a state-designated fishery classification or protected status (e.g., agricultural or intermittent drainage ditches). However, if an equipment bridge is used it must be constructed as described in section V.B.5.

## 8. Crossings of Intermediate Waterbodies

Where a dry-ditch crossing is not required, intermediate waterbodies may be crossed using the open-cut crossing method, with the following restrictions:

- a. complete instream construction activities (not including blasting and other rock breaking measures) within 48 hours, unless site-specific conditions make completion within 48 hours infeasible;
- b. limit use of equipment operating in the waterbody to that needed to construct the crossing; and
- c. all other construction equipment must cross on an equipment bridge as specified in section V.B.5.

## 9. Crossings of Major Waterbodies

Before construction, the project sponsor shall file with the Secretary for the review and written approval by the Director a detailed, site-specific construction plan and scaled drawings identifying all areas to be disturbed by construction for each major waterbody crossing (the scaled drawings are not required for any offshore portions of pipeline projects). This plan must be developed in consultation with the appropriate state and federal agencies and shall include extra work areas, spoil storage areas, sediment control structures, etc., as well as mitigation for navigational issues. The requirement to file major waterbody crossing plans does not apply to projects constructed under the automatic authorization provisions of the FERC's regulations. The Environmental Inspector may adjust the final placement of the erosion and sediment control structures in the field to maximize effectiveness.

## 10. Temporary Erosion and Sediment Control

Install sediment barriers (as defined in section IV.F.3.a of the Plan) immediately after initial disturbance of the waterbody or adjacent upland. Sediment barriers must be properly maintained throughout construction and re-installed as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration of adjacent upland areas is complete. Temporary erosion and sediment control measures are addressed in more detail in the Plan; however, the following specific measures must be implemented at stream crossings:

- a. install sediment barriers across the entire construction right-of-way at all waterbody crossings, where necessary to prevent the flow of sediments into the waterbody. Removable sediment barriers (or driveable berms) must be installed across the travel lane. These removable sediment barriers can be removed during the construction day, but must be re-installed after construction has stopped for the day and/or when heavy precipitation is imminent;

- b. where waterbodies are adjacent to the construction right-of-way and the right-of-way slopes toward the waterbody, install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil within the construction right-of-way and prevent sediment flow into the waterbody; and
- c. use temporary trench plugs at all waterbody crossings, as necessary, to prevent diversion of water into upland portions of the pipeline trench and to keep any accumulated trench water out of the waterbody.

#### 11. Trench Dewatering

Dewater the trench (either on or off the construction right-of-way) in a manner that does not cause erosion and does not result in silt-laden water flowing into any waterbody. Remove the dewatering structures as soon as practicable after the completion of dewatering activities.

#### C. Restoration

1. Use clean gravel or native cobbles for the upper 1 foot of trench backfill in all waterbodies that contain coldwater fisheries.
2. For open-cut crossings, stabilize waterbody banks and install temporary sediment barriers within 24 hours of completing instream construction activities. For dry-ditch crossings, complete streambed and bank stabilization before returning flow to the waterbody channel.
3. Return all waterbody banks to pre-construction contours or to a stable angle of repose as approved by the Environmental Inspector.
4. Install erosion control fabric or a functional equivalent on waterbody banks at the time of final bank recontouring. Do not use synthetic monofilament mesh/netted erosion control materials in areas designated as sensitive wildlife habitat unless the product is specifically designed to minimize harm to wildlife. Anchor erosion control fabric with staples or other appropriate devices.
5. Application of riprap for bank stabilization must comply with COE, or its delegated agency, permit terms and conditions.
6. Unless otherwise specified by state permit, limit the use of riprap to areas where flow conditions preclude effective vegetative stabilization techniques such as seeding and erosion control fabric.
7. Revegetate disturbed riparian areas with native species of conservation grasses, legumes, and woody species, similar in density to adjacent undisturbed lands.
8. Install a permanent slope breaker across the construction right-of-way at the base of slopes greater than 5 percent that are less than 50 feet from

the waterbody, or as needed to prevent sediment transport into the waterbody.

In some areas, with the approval of the Environmental Inspector, an earthen berm may be suitable as a sediment barrier adjacent to the waterbody.

9. Sections V.C.3 through V.C.7 above also apply to those perennial or intermittent streams not flowing at the time of construction.

#### D. Post-Construction Maintenance

1. Limit routine vegetation mowing or clearing adjacent to waterbodies to allow a riparian strip at least 25 feet wide, as measured from the waterbody's mean high water mark, to permanently revegetate with native plant species across the entire construction right-of-way. However, to facilitate periodic corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be cleared at a frequency necessary to maintain the 10-foot corridor in an herbaceous state. In addition, trees that are located within 15 feet of the pipeline that have roots that could compromise the integrity of the pipeline coating may be cut and removed from the permanent right-of-way. Do not conduct any routine vegetation mowing or clearing in riparian areas that are between HDD entry and exit points.
2. Do not use herbicides or pesticides in or within 100 feet of a waterbody except as allowed by the appropriate land management or state agency.
3. Time of year restrictions specified in section VII.A.5 of the Plan (April 15 – August 1 of any year) apply to routine mowing and clearing of riparian areas.

## VI. Wetland Crossings

#### A. General

1. The project sponsor shall conduct a wetland delineation using the current federal methodology and file a wetland delineation report with the Secretary before construction. The requirement to file a wetland delineation report does not apply to projects constructed under the automatic authorization provisions in the FERC's regulations.

This report shall identify:

- a. by milepost all wetlands that would be affected;
- b. the National Wetlands Inventory (NWI) classification for each wetland;
- c. the crossing length of each wetland in feet; and

- d. the area of permanent and temporary disturbance that would occur in each wetland by NWI classification type.

The requirements outlined in this section do not apply to wetlands in actively cultivated or rotated cropland. Standard upland protective measures, including workspace and topsoiling requirements, apply to these agricultural wetlands.

2. Route the pipeline to avoid wetland areas to the maximum extent possible. If a wetland cannot be avoided or crossed by following an existing right-of-way, route the new pipeline in a manner that minimizes disturbance to wetlands. Where looping an existing pipeline, overlap the existing pipeline right-of-way with the new construction right-of-way. In addition, locate the loop line no more than 25 feet away from the existing pipeline unless site-specific constraints would adversely affect the stability of the existing pipeline.
3. Limit the width of the construction right-of-way to 75 feet or less. Prior written approval of the Director is required where topographic conditions or soil limitations require that the construction right-of-way width within the boundaries of a federally delineated wetland be expanded beyond 75 feet. Early in the planning process the project sponsor is encouraged to identify site-specific areas where excessively wide trenches could occur and/or where spoil piles could be difficult to maintain because existing soils lack adequate unconfined compressive strength.
4. Wetland boundaries and buffers must be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete.
5. Implement the measures of sections V and VI in the event a waterbody crossing is located within or adjacent to a wetland crossing. If all measures of sections V and VI cannot be met, the project sponsor must file with the Secretary a site-specific crossing plan for review and written approval by the Director before construction. This crossing plan shall address at a minimum:
  - a. spoil control;
  - b. equipment bridges;
  - c. restoration of waterbody banks and wetland hydrology;
  - d. timing of the waterbody crossing;
  - e. method of crossing; and
  - f. size and location of all extra work areas.

6. No aboveground facilities will be constructed in any wetland, except where the location of such facilities outside of wetlands would prohibit compliance with U.S. Department of Transportation regulations.

B. Installation

1. Extra Work Areas and Access Roads

- a. Locate all extra work areas (such as staging areas and additional spoil storage areas) at least 50 feet away from wetland boundaries, except where the adjacent upland consists of cultivated or rotated cropland or other disturbed land.
- b. The project sponsor shall file with the Secretary for review and written approval by the Director, site-specific justification for each extra work area with a less than 50-foot setback from wetland boundaries, except where adjacent upland consists of cultivated or rotated cropland or other disturbed land. The justification must specify the site-specific conditions that will not permit a 50-foot setback and measures to ensure the wetland is adequately protected.
- c. The construction right-of-way may be used for access when the wetland soil is firm enough to avoid rutting or the construction right-of-way has been appropriately stabilized to avoid rutting (e.g., with timber riprap, prefabricated equipment mats, or terra mats).

In wetlands that cannot be appropriately stabilized, all construction equipment other than that needed to install the wetland crossing shall use access roads located in upland areas. Where access roads in upland areas do not provide reasonable access, limit all other construction equipment to one pass through the wetland using the construction right-of-way.

2. Crossing Procedures

- a. Comply with COE, or its delegated agency, permit terms and conditions.
- b. Assemble the pipeline in an upland area unless the wetland is dry enough to adequately support skids and pipe.
- c. Use “push-pull” or “float” techniques to place the pipe in the trench where water and other site conditions allow.
- d. Minimize the length of time that topsoil is segregated and the trench is open. Do not trench the wetland until the pipeline is assembled and ready for lowering in.



e. Limit construction equipment operating in wetland areas to that needed to clear the construction right-of-way, dig the trench, fabricate and install the pipeline, backfill the trench, and restore the construction right-of-way.

f. Cut vegetation just above ground level, leaving existing root systems in place, and remove it from the wetland for disposal.

The project sponsor can burn woody debris in wetlands, if approved by the COE and in accordance with state and local regulations, ensuring that all remaining woody debris is removed for disposal.

g. Limit pulling of tree stumps and grading activities to directly over the trenchline. Do not grade or remove stumps or root systems from the rest of the construction right-of-way in wetlands unless the Chief Inspector and Environmental Inspector determine that safety-related construction constraints require grading or the removal of tree stumps from under the working side of the construction right-of-way.

h. Segregate the top 1 foot of topsoil from the area disturbed by trenching, except in areas where standing water is present or soils are saturated. Immediately after backfilling is complete, restore the segregated topsoil to its original location.

i. Do not use rock, soil imported from outside the wetland, tree stumps, or brush riprap to support equipment on the construction right-of-way.

j. If standing water or saturated soils are present, or if construction equipment causes ruts or mixing of the topsoil and subsoil in wetlands, use low-ground-weight construction equipment, or operate normal equipment on timber riprap, prefabricated equipment mats, or terra mats.

k. Remove all project-related material used to support equipment on the construction right-of-way upon completion of construction

### 3. Temporary Sediment Control

Install sediment barriers (as defined in section IV.F.3.a of the Plan) immediately after initial disturbance of the wetland or adjacent upland. Sediment barriers must be properly maintained throughout construction and re-installed as necessary (such as after backfilling of the trench). Except as noted below in section VI.B.3.c, maintain sediment barriers until replaced by permanent erosion controls or restoration of adjacent upland areas is complete. Temporary erosion and sediment control measures are addressed in more detail in the Plan.

- a. Install sediment barriers across the entire construction right-of-way immediately upslope of the wetland boundary at all wetland crossings where necessary to prevent sediment flow into the wetland.
- b. Where wetlands are adjacent to the construction right-of-way and the right-of-way slopes toward the wetland, install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil within the construction right-of-way and prevent sediment flow into the wetland.
- c. Install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil and sediment within the construction right-of-way through wetlands. Remove these sediment barriers during right-of-way cleanup.

#### 4. Trench Dewatering

Dewater the trench (either on or off the construction right-of-way) in a manner that does not cause erosion and does not result in silt-laden water flowing into any wetland. Remove the dewatering structures as soon as practicable after the completion of dewatering activities.

### C. Restoration

1. Where the pipeline trench may drain a wetland, construct trench breakers at the wetland boundaries and/or seal the trench bottom as necessary to maintain the original wetland hydrology.
2. Restore pre-construction wetland contours to maintain the original wetland hydrology.
3. For each wetland crossed, install a trench breaker at the base of slopes near the boundary between the wetland and adjacent upland areas. Install a permanent slope breaker across the construction right-of-way at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from the wetland, or as needed to prevent sediment transport into the wetland. In addition, install sediment barriers as outlined in the Plan. In some areas, with the approval of the Environmental Inspector, an earthen berm may be suitable as a sediment barrier adjacent to the wetland.
4. Do not use fertilizer, lime, or mulch unless required in writing by the appropriate federal or state agency.
5. Consult with the appropriate federal or state agencies to develop a project-specific wetland restoration plan. The restoration plan shall include measures for re-establishing herbaceous and/or woody species, controlling the invasion and spread of invasive species and noxious weeds (e.g., purple loosestrife and *phragmites*), and monitoring the

success of the revegetation and weed control efforts. Provide this plan to the FERC staff upon request.

6. Until a project-specific wetland restoration plan is developed and/or implemented, temporarily revegetate the construction right-of-way with annual ryegrass at a rate of 40 pounds/acre (unless standing water is present).

7. Ensure that all disturbed areas successfully revegetate with wetland herbaceous and/or woody plant species.

8. Remove temporary sediment barriers located at the boundary between wetland and adjacent upland areas after revegetation and stabilization of adjacent upland areas are judged to be successful as specified in section VII.A.4 of the Plan.

#### D. Post-Construction Maintenance and Reporting

1. Do not conduct routine vegetation mowing or clearing over the full width of the permanent right-of-way in wetlands. However, to facilitate periodic corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be cleared at a frequency necessary to maintain the 10-foot corridor in an herbaceous state. In addition, trees within 15 feet of the pipeline with roots that could compromise the integrity of pipeline coating may be selectively cut and removed from the permanent right-of-way. Do not conduct any routine vegetation mowing or clearing in wetlands that are between HDD entry and exit points.

2. Do not use herbicides or pesticides in or within 100 feet of a wetland, except as allowed by the appropriate federal or state agency.

3. Time of year restrictions specified in section VII.A.5 of the Plan (April 15 – August 1 of any year) apply to routine mowing and clearing of wetland areas.

4. Monitor and record the success of wetland revegetation annually until wetland revegetation is successful.

5. Wetland revegetation shall be considered successful if all of the following criteria are satisfied:

a. the affected wetland satisfies the current federal definition for a wetland (i.e., soils, hydrology, and vegetation);

b. vegetation is at least 80 percent of either the cover documented for the wetland prior to construction, or at least 80 percent of the cover in adjacent wetland areas that were not disturbed by construction;

c. if natural rather than active revegetation was used, the plant species composition is consistent with early successional wetland plant communities in the affected ecoregion; and

- d. invasive species and noxious weeds are absent, unless they are abundant in adjacent areas that were not disturbed by construction.

6. Within 3 years after construction, file a report with the Secretary identifying the status of the wetland revegetation efforts and documenting success as defined in section VI.D.5, above. The requirement to file wetland restoration reports with the Secretary does not apply to projects constructed under the automatic authorization, prior notice, or advance notice provisions in the FERC's regulations.

For any wetland where revegetation is not successful at the end of 3 years after construction, develop and implement (in consultation with a professional wetland ecologist) a remedial revegetation plan to actively revegetate wetlands. Continue revegetation efforts and file a report annually documenting progress in these wetlands until wetland revegetation is successful.

## VII. Hydrostatic Testing

### A. Notification Procedures and Permits

1. Apply for state-issued water withdrawal permits, as required.
2. Apply for National Pollutant Discharge Elimination System (NPDES) or state-issued discharge permits, as required.
3. Notify appropriate state agencies of intent to use specific sources at least 48 hours before testing activities unless they waive this requirement in writing.

### B. General

1. Perform 100 percent radiographic inspection of all pipeline section welds or hydrotest the pipeline sections, before installation under waterbodies or wetlands.
2. If pumps used for hydrostatic testing are within 100 feet of any waterbody or wetland, address secondary containment and refueling of these pumps in the project's Spill Prevention and Response Procedures.
3. The project sponsor shall file with the Secretary before construction a list identifying the location of all waterbodies proposed for use as a hydrostatic test water source or discharge location. This filing requirement does not apply to projects constructed under the automatic authorization provisions of the FERC's regulations.

### C. Intake Source and Rate

1. Screen the intake hose to minimize the potential for entrainment of fish.

671 2. Do not use state-designated exceptional value waters, waterbodies  
672 which provide habitat for federally listed threatened or endangered  
673 species, or waterbodies designated as public water supplies, unless  
674 appropriate federal, state, and/or local permitting agencies grant written  
675 permission.

676 3. Maintain adequate flow rates to protect aquatic life, provide for all  
677 waterbody uses, and provide for downstream withdrawals of water by  
678 existing users.

679 4. Locate hydrostatic test manifolds outside wetlands and riparian areas to  
680 the maximum extent practicable.

681 D. Discharge Location, Method, and Rate

682 1. Regulate discharge rate, use energy dissipation device(s), and install  
683 sediment barriers, as necessary, to prevent erosion, streambed scour,  
684 suspension of sediments, or excessive streamflow.

685 2. Do not discharge into state-designated exceptional value waters,  
686 waterbodies which provide habitat for federally listed threatened or  
687 endangered species, or waterbodies designated as public water supplies,  
688 unless appropriate federal, state, and local permitting agencies grant  
689 written permission.

## 7. SEEDING MIXTURE TABLES

Seeding mixtures will comply with the VESCH and Virginia Department of Conservation and Recreation's Native vs. Invasive Plant Species FAQ:

<https://www.deq.virginia.gov/PORTALS/0/DEQ/WATER/PUBLICATIONS/NATIVEINVASIVEFAQ.PDF>.

Acceptable Temporary Seeding Plant Materials Quick Reference for All Regions		
Planting Dates	Species <sup>a</sup>	Rate (pounds / acre)
September 1 – February 15	50 / 50 mix of annual ryegrass ( <i>Lolium multi-florum</i> ) and cereal (winter) rye ( <i>Secale cereale</i> )	50 – 100
February 16 – April 30	50 / 50 mix of annual ryegrass ( <i>Lolium multi-florum</i> )	60 – 100
May 1 – August 31	German Millet ( <i>Setaria italic</i> )	50
a - VESCH does not have wetland seeding mixtures; Wetland seeding mixtures will be included in ESC plans.		

## 8. UPLAND EROSION CONTROL, REVEGETATION, AND MAINTENANCE PLAN (FERC REQUIREMENTS)

The FERC provides general industry guidance for pipeline construction across upland areas for FERC-regulated projects in the *FERC Upland Erosion Control, Revegetation, and Maintenance Plan* (FERC Plan). Transco will adhere to Virginia requirements in instances where the state requirements provide for equal or greater environmental protections than the FERC Plan.

### I. Applicability

- A. The intent of this Plan is to assist project sponsors by identifying baseline mitigation measures for minimizing erosion and enhancing revegetation. Project sponsors shall specify in their applications for a new FERC authorization and in prior notice and advance notice filings, any individual measures in this Plan they consider unnecessary, technically infeasible, or unsuitable due to local conditions and fully describe any alternative measures they would use. Project sponsors shall also explain how those alternative measures would achieve a comparable level of mitigation.

Once a project is authorized, project sponsors can request further changes as variances to the measures in this Plan (or the applicant's approved plan). The Director of the Office of Energy Projects (Director) will consider approval of variances upon the project sponsor's written request, if the Director agrees that a variance:

1. provides equal or better environmental protection;
2. is necessary because a portion of this Plan is infeasible or unworkable based on project-specific conditions; or
3. is specifically required in writing by another federal, state, or Native American land management agency for the portion of the project on its land or under its jurisdiction.

Sponsors of projects planned for construction under the automatic authorization provisions in the FERC's regulations must receive written approval for any variances in advance of construction.

Project-related impacts on wetland and waterbody systems are addressed in the staff's Wetland and Waterbody Construction and Mitigation Procedures (Procedures).

### II. Supervision and Inspection

#### A. Environmental Inspection

1. At least one Environmental Inspector is required for each construction spread during construction and restoration (as

defined by section V). The number and experience of Environmental Inspectors assigned to each construction spread shall be appropriate for the length of the construction spread and the number/significance of resources affected.

2. Environmental Inspectors shall have peer status with all other activity inspectors.
3. Environmental Inspectors shall have the authority to stop activities that violate the environmental conditions of the FERC's Orders, stipulations of other environmental permits or approvals, or landowner easement agreements; and to order appropriate corrective action.

## B. Responsibilities of Environmental Inspectors

At a minimum, the Environmental Inspector(s) shall be responsible for:

1. Inspecting construction activities for compliance with the requirements of this Plan, Procedures, the environmental conditions of the FERC's Orders, the mitigation measures proposed by the project sponsor (as approved and/or modified by the Order), other environmental permits and approvals, and environmental requirements in landowner easement agreements.
2. Identifying, documenting, and overseeing corrective actions, as necessary to bring an activity back into compliance;
3. Verifying that the limits of authorized construction work areas and locations of access roads are visibly marked before clearing, and maintained throughout construction;
4. Verifying the location of signs and highly visible flagging marking the boundaries of sensitive resource areas, waterbodies, wetlands, or areas with special requirements along the construction work area;
5. Identifying erosion/sediment control and soil stabilization needs in all areas;
6. Ensuring that the design of slope breakers will not cause erosion or direct water into sensitive environmental resource areas, including cultural resource sites, wetlands, waterbodies, and sensitive species habitats;
7. Verifying that dewatering activities are properly monitored and do not result in the deposition of sand, silt, and/or sediment into sensitive environmental resource areas, including wetlands, waterbodies, cultural resource sites, and sensitive species habitats; stopping dewatering activities if such deposition is occurring and ensuring the design of the discharge is changed to



- prevent reoccurrence; and verifying that dewatering structures are removed after completion of dewatering activities;
8. Ensuring that subsoil and topsoil are tested in agricultural and residential areas to measure compaction and determine the need for corrective action;
  9. Advising the Chief Construction Inspector when environmental conditions (such as wet weather or frozen soils) make it advisable to restrict or delay construction activities to avoid topsoil mixing or excessive compaction;
  10. Ensuring restoration of contours and topsoil;
  11. Verifying that the soils imported for agricultural or residential use are certified as free of noxious weeds and soil pests, unless otherwise approved by the landowner;
  12. Ensuring that erosion control devices are properly installed to prevent sediment flow into sensitive environmental resource areas (e.g., wetlands, waterbodies, cultural resource sites, and sensitive species habitats) and onto roads, and determining the need for additional erosion control devices;
  13. Inspecting and ensuring the maintenance of temporary erosion control measures at least:
    - a. on a daily basis in areas of active construction or equipment operation;
    - b. on a weekly basis in areas with no construction or equipment operation; and
    - c. within 24 hours of each 0.5 inch of rainfall;
  14. Ensuring the repair of all ineffective temporary erosion control measures within 24 hours of identification, or as soon as conditions allow if compliance with this time frame would result in greater environmental impacts;
  15. Keeping records of compliance with the environmental conditions of the FERC's Orders, and the mitigation measures proposed by the project sponsor in the application submitted to the FERC, and other federal or state environmental permits during active construction and restoration;
  16. Identifying areas that should be given special attention to ensure stabilization and restoration after the construction phase; and
  17. Verifying that locations for any disposal of excess construction materials for beneficial reuse comply with section III.E.

### III. Pre-construction Planning

The project sponsor shall do the following before construction:

#### A. Construction Work Areas

1. Identify all construction work areas (e.g., construction right-of-way, extra work space areas, pipe storage and contractor yards, borrow and disposal areas, access roads) that would be needed for safe construction. The project sponsor must ensure that appropriate cultural resources and biological surveys are conducted, as determined necessary by the appropriate federal and state agencies.
2. Project sponsors are encouraged to consider expanding any required cultural resources and endangered species surveys in anticipation of the need for activities outside of authorized work areas.
3. Plan construction sequencing to limit the amount and duration of open trench sections, as necessary, to prevent excessive erosion or sediment flow into sensitive environmental resource areas.

#### B. Drain Tiles and Irrigation Systems

1. Attempt to locate existing drain tiles and irrigation systems.
2. Contact landowners and local soil conservation authorities to determine the locations of future drain tiles that are likely to be installed within 3 years of the authorized construction.
3. Develop procedures for constructing through drain-tiled areas, maintaining irrigation systems during construction, and repairing drain tiles and irrigation systems after construction.
4. Engage qualified drain tile specialists, as needed to conduct or monitor repairs to drain tile systems affected by construction. Use drain tile specialists from the project area, if available.

#### C. Grazing Deferment

Develop grazing deferment plans with willing landowners, grazing permittees, and land management agencies to minimize grazing disturbance of revegetation efforts.

#### D. Road Crossings and Access Points

Plan for safe and accessible conditions at all roadway crossings and access points during construction and restoration.

## E. Disposal Planning

Determine methods and locations for the regular collection, containment, and disposal of excess construction materials and debris (e.g., timber, slash, mats, garbage, drill cuttings and fluids, excess rock) throughout the construction process. Disposal of materials for beneficial reuse must not result in adverse environmental impact and is subject to compliance with all applicable survey, landowner or land management agency approval, and permit requirements.

## F. Agency Coordination

The project sponsor must coordinate with the appropriate local, state, and federal agencies as outlined in this Plan and/or required by the FERC's Orders.

1. Obtain written recommendations from the local soil conservation authorities or land management agencies regarding permanent erosion control and revegetation specifications.
2. Develop specific procedures in coordination with the appropriate agencies to prevent the introduction or spread of invasive species, noxious weeds, and soil pests resulting from construction and restoration activities.
3. Develop specific procedures in coordination with the appropriate agencies and landowners, as necessary, to allow for livestock and wildlife movement and protection during construction.
4. Develop specific blasting procedures in coordination with the appropriate agencies that address pre- and post-blast inspections; advanced public notification; and mitigation measures for building foundations, groundwater wells, and springs. Use appropriate methods (e.g., blasting mats) to prevent damage to nearby structures and to prevent debris from entering sensitive environmental resource areas.

## G. Spill Prevention and Response Procedures

The project sponsor shall develop project-specific Spill Prevention and Response Procedures, as specified in section IV of the staff's Procedures. A copy must be filed with the Secretary of the FERC (Secretary) prior to construction and made available in the field on each construction spread. The filing requirement does not apply to projects constructed under the automatic authorization provisions in the FERC's regulations.

## H. Residential Construction

For all properties with residences located within 50 feet of construction work areas, project sponsors shall: avoid removal of mature trees and landscaping within the construction work area unless necessary for safe

operation of construction equipment, or as specified in landowner agreements; fence the edge of the construction work area for a distance of 100 feet on either side of the residence; and restore all lawn areas and landscaping immediately following clean-up operations, or as specified in landowner agreements. If seasonal or other weather conditions prevent compliance with these time frames, maintain and monitor temporary erosion controls (sediment barriers and mulch) until conditions allow completion of restoration.

## I. Winter Construction Plan

If construction is planned to occur during winter weather conditions, project sponsors shall develop and file a project-specific winter construction plan with the FERC application. This filing requirement does not apply to projects constructed under the automatic authorization provisions of the FERC's regulations.

The plan shall address:

1. winter construction procedures (e.g., snow handling and removal, access road construction and maintenance, soil handling under saturated or frozen conditions, topsoil stripping);
2. stabilization and monitoring procedures if ground conditions will delay restoration until the following spring (e.g., mulching and erosion controls, inspection and reporting, stormwater control during spring thaw conditions); and
3. final restoration procedures (e.g., subsidence and compaction repair, topsoil replacement, seeding).

## IV. Installation

### A. Approved Areas of Disturbance

1. Project-related ground disturbance shall be limited to the construction right-of-way, extra work space areas, pipe storage yards, borrow and disposal areas, access roads, and other areas approved in the FERC's Orders. Any project-related ground disturbing activities outside these Certified areas will require prior Director approval. This requirement does not apply to activities needed to comply with the Plan and the Procedures (i.e., slope, energy-dissipating devices, dewatering structures, drain tile system repairs) or minor field realignments and workspace shifts per landowner needs and requirements that do not affect other landowners or sensitive environmental resource areas. All construction or restoration activities outside of authorized areas are subject to all applicable survey and permit requirements, and landowner easement agreements.

2. The construction right-of-way width for a project shall not exceed 75 feet or that described in the FERC application unless otherwise modified by a FERC Order. However, in limited, non-wetland areas, this construction right-of-way width may be expanded by up to 25 feet without Director approval to accommodate full construction right-of-way topsoil segregation and to ensure safe construction where topographic conditions (e.g., side-slopes) or soil limitations require it. Twenty-five feet of extra construction right-of-way width may also be used in limited, non-wetland or non-forested areas for truck turn-arounds where no reasonable alternative access exists.

Project use of these additional limited areas is subject to landowner or land management agency approval and compliance with all applicable survey and permit requirements. When additional areas are used, each one shall be identified and the need explained in the weekly or biweekly construction reports to the FERC, if required. The following material shall be included in the reports:

- a. the location of each additional area by station number and reference to previously filed alignment sheets, or updated alignment sheets showing the additional areas;
- b. identification of the filing at FERC containing evidence that the additional areas were previously surveyed; and
- c. a statement that landowner approval has been obtained and is available in project files.

Prior written approval of the Director is required when the authorized construction right-of-way width would be expanded by more than 25 feet.

## B. Topsoil Segregation

1. Unless the landowner or land management agency specifically approves otherwise, prevent the mixing of topsoil with subsoil by stripping topsoil from either the full work area or from the trench and subsoil storage area (ditch plus spoil side method) in:
  - a. cultivated or rotated croplands, and managed pastures;
  - b. residential areas;
  - c. hayfields; and
  - d. other areas at the landowner's or land managing agency's request.

2. In residential areas, importation of topsoil is an acceptable alternative to topsoil segregation.
3. Where topsoil segregation is required, the project sponsor must:
  - a. segregate at least 12 inches of topsoil in deep soils (more than 12 inches of topsoil); and
  - b. make every effort to segregate the entire topsoil layer in soils with less than 12 inches of topsoil.
4. Maintain separation of salvaged topsoil and subsoil throughout all construction activities.
5. Segregated topsoil may not be used for padding the pipe, constructing temporary slope breakers or trench plugs, improving or maintaining roads, or as a fill material.
6. Stabilize topsoil piles and minimize loss due to wind and water erosion with use of sediment barriers, mulch, temporary seeding, tackifiers, or functional equivalents, where necessary.

#### C. Drain Tiles

1. Mark locations of drain tiles damaged during construction.
2. Probe all drainage tile systems within the area of disturbance to check for damage.
3. Repair damaged drain tiles to their original or better condition. Do not use filter-covered drain tiles unless the local soil conservation authorities and the landowner agree. Use qualified specialists for testing and repairs.
4. For new pipelines in areas where drain tiles exist or are planned, ensure that the depth of cover over the pipeline is sufficient to avoid interference with drain tile systems. For adjacent pipeline loops in agricultural areas, install the new pipeline with at least the same depth of cover as the existing pipeline(s).

#### D. Irrigation

Maintain water flow in crop irrigation systems, unless shutoff is coordinated with affected parties.

#### E. Road Crossings and Access Points

1. Maintain safe and accessible conditions at all road crossings and access points during construction.
2. If crushed stone access pads are used in residential or agricultural areas, place the stone on synthetic fabric to facilitate removal.
3. Minimize the use of tracked equipment on public roadways. Remove any soil or gravel spilled or tracked onto roadways daily or

more frequent as necessary to maintain safe road conditions.  
Repair any damages to roadway surfaces, shoulders, and bar  
ditches.

## F. Temporary Erosion Control

Install temporary erosion controls immediately after initial disturbance of the soil. Temporary erosion controls must be properly maintained throughout construction (on a daily basis) and re-installed as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration is complete.

### 1. Temporary Slope Breakers

- a. Temporary slope breakers are intended to reduce runoff velocity and divert water off the construction right-of-way. Temporary slope breakers may be constructed of materials such as soil, silt fence, staked hay or straw bales, or sand bags.
- b. Install temporary slope breakers on all disturbed areas, as necessary to avoid excessive erosion. Temporary slope breakers must be installed on slopes greater than 5 percent where the base of the slope is less than 50 feet from waterbody, wetland, and road crossings at the following spacing (closer spacing shall be used if necessary):

<u>Slope (%)</u>	<u>Spacing</u>
5-15%	300
>15-30	200
>30	100

- c. Direct the outfall of each temporary slope breaker to a stable, well vegetated area or construct an energy-dissipating device at the end of the slope breaker and off the construction right-of-way.
- d. Position the outfall of each temporary slope breaker to prevent sediment discharge into wetlands, waterbodies, or other sensitive environmental resource areas.

### 2. Temporary Trench Plugs

Temporary trench plugs are intended to segment a continuous open trench prior to backfill.

- a. Temporary trench plugs may consist of unexcavated portions of the trench, compacted subsoil, sandbags, or some functional equivalent.

- b. Position temporary trench plugs, as necessary, to reduce trenchline erosion and minimize the volume and velocity of trench water flow at the base of slopes.

### 3. Sediment Barriers

Sediment barriers are intended to stop the flow of sediments and to prevent the deposition of sediments beyond approved workspaces or into sensitive resources.

- a. Sediment barriers may be constructed of materials such as silt fence, staked hay or straw bales, compacted earth (e.g., driveable berms across travelways), sand bags, or other appropriate materials.
- b. At a minimum, install and maintain temporary sediment barriers across the entire construction right-of-way at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from a waterbody, wetland, or road crossing until revegetation is successful as defined in this Plan. Leave adequate room between the base of the slope and the sediment barrier to accommodate ponding of water and sediment deposition.
- c. Where wetlands or waterbodies are adjacent to and downslope of construction work areas, install sediment barriers along the edge of these areas, as necessary to prevent sediment flow into the wetland or waterbody.

### 4. Mulch

- a. Apply mulch on all slopes (except in cultivated cropland) concurrent with or immediately after seeding, where necessary to stabilize the soil surface and to reduce wind and water erosion. Spread mulch uniformly over the area to cover at least 75 percent of the ground surface at a rate of 2 tons/acre of straw or its equivalent, unless the local soil conservation authority, landowner, or land managing agency approves otherwise in writing.
- b. Mulch can consist of weed-free straw or hay, wood fiber hydromulch, erosion control fabric, or some functional equivalent.
- c. Mulch all disturbed upland areas (except cultivated cropland) before seeding if:
- (1) final grading and installation of permanent erosion control measures will not be completed in an area within 20 days after the trench in that area is backfilled (10 days in residential areas), as required in section V.A.1; or



(2) construction or restoration activity is interrupted for extended periods, such as when seeding cannot be completed due to seeding period restrictions.

- d. If mulching before seeding, increase mulch application on all slopes within 100 feet of waterbodies and wetlands to a rate of 3 tons/acre of straw or equivalent.
- e. If wood chips are used as mulch, do not use more than 1 ton/acre and add the equivalent of 11 lbs/acre available nitrogen (at least 50 percent of which is slow release).
- f. Ensure that mulch is adequately anchored to minimize loss due to wind and water.
- g. When anchoring with liquid mulch binders, use rates recommended by the manufacturer. Do not use liquid mulch binders within 100 feet of wetlands or waterbodies, except where the product is certified environmentally non-toxic by the appropriate state or federal agency or independent standards-setting organization.
- h. Do not use synthetic monofilament mesh/netted erosion control materials in areas designated as sensitive wildlife habitat, unless the product is specifically designed to minimize harm to wildlife. Anchor erosion control fabric with staples or other appropriate devices.

## V. Restoration

### A. Cleanup

1. Commence cleanup operations immediately following backfill operations.

Complete final grading, topsoil replacement, and installation of permanent erosion control structures within 20 days after backfilling the trench (10 days in residential areas). If seasonal or other weather conditions prevent compliance with these time frames, maintain temporary erosion controls (i.e., temporary slope breakers, sediment barriers, and mulch) until conditions allow completion of cleanup.

If construction or restoration unexpectedly continues into the winter season when conditions could delay successful decompaction, topsoil replacement, or seeding until the following spring, file with the Secretary for the review and written approval of the Director, a winter construction plan (as specified in section III.I). This filing requirement does not apply to projects constructed under the automatic authorization provisions of the FERC's regulations.

2. A travel lane may be left open temporarily to allow access by construction traffic if the temporary erosion control structures are installed as specified in section IV.F. and inspected and maintained as specified in sections II.B.12 through 14. When access is no longer required the travel lane must be removed and the right-of-way restored.
3. Rock excavated from the trench may be used to backfill the trench only to the top of the existing bedrock profile. Rock that is not returned to the trench shall be considered construction debris, unless approved for use as mulch or for some other use on the construction work areas by the landowner or land managing agency.
4. Remove excess rock from at least the top 12 inches of soil in all cultivated or rotated cropland, managed pastures, hayfields, and residential areas, as well as other areas at the landowner's request. The size, density, and distribution of rock on the construction work area shall be similar to adjacent areas not disturbed by construction. The landowner or land management agency may approve other provisions in writing.
5. Grade the construction right-of-way to restore pre-construction contours and leave the soil in the proper condition for planting.
6. Remove construction debris from all construction work areas unless the landowner or land managing agency approves leaving materials on-site for beneficial reuse, stabilization, or habitat restoration.
7. Remove temporary sediment barriers when replaced by permanent erosion control measures or when revegetation is successful.

## B. Permanent Erosion Control Devices

### 1. Trench Breakers

- a. Trench breakers are intended to slow the flow of subsurface water along the trench. Trench breakers may be constructed of materials such as sand bags or polyurethane foam. Do not use topsoil in trench breakers.
- b. An engineer or similarly qualified professional shall determine the need for and spacing of trench breakers. Otherwise, trench breakers shall be installed at the same spacing as and upslope of permanent slope breakers.
- c. In agricultural fields and residential areas where slope breakers are not typically required, install trench breakers at

the same spacing as if permanent slope breakers were required.

- d. At a minimum, install a trench breaker at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from a waterbody or wetland and where needed to avoid draining a waterbody or wetland. Install trench breakers at wetland boundaries, as specified in the Procedures. Do not install trench breakers within a wetland.

## 2. Permanent Slope breakers

- a. Permanent slope breakers are intended to reduce runoff velocity, divert water off the construction right-of-way, and prevent sediment deposition into sensitive resources. Permanent slope breakers may be constructed of materials such as soil, stone, or some functional equivalent.

- b. Construct and maintain permanent slope breakers in all areas, except cultivated areas and lawns, unless requested by the landowner, using spacing recommendations obtained from the local soil conservation authority or land managing agency.

In the absence of written recommendations, use the following spacing unless closer spacing is necessary to avoid excessive erosion on the construction right-of-way:

<u>Slope (%)</u>	<u>Spacing (feet)</u>
5-15	300
>15-30	200
>30	100

- c. Construct slope breakers to divert surface flow to a stable area without causing water to pool or erode behind the breaker. In the absence of a stable area, construct appropriate energy-dissipating devices at the end of the breaker.
- d. Slope breakers may extend slightly (about 4 feet) beyond the edge of the construction right-of-way to effectively drain water off the disturbed area. Where slope breakers extend beyond the edge of the construction right-of-way, they are subject to compliance with all applicable survey requirements.

## C. Soil Compaction Mitigation

- 1. Test topsoil and subsoil for compaction at regular intervals in agricultural and residential areas disturbed by construction activities. Conduct tests on the same soil type under similar moisture conditions in undisturbed areas to approximate pre-

construction conditions. Use penetrometers or other appropriate devices to conduct tests.

2. Plow severely compacted agricultural areas with a paraplow or other deep tillage implement. In areas where topsoil has been segregated, plow the subsoil before replacing the segregated topsoil.

If subsequent construction and cleanup activities result in further compaction, conduct additional tilling.

3. Perform appropriate soil compaction mitigation in severely compacted residential areas.

## D. Revegetation

### 1. General

- a. The project sponsor is responsible for ensuring successful revegetation of soils disturbed by project-related activities, except as noted in section V.D.1.b.

- b. Restore all turf, ornamental shrubs, and specialized landscaping in accordance with the landowner's request, or compensate the landowner. Restoration work must be performed by personnel familiar with local horticultural and turf establishment practices.

### 2. Soil Additives

Fertilize and add soil pH modifiers in accordance with written recommendations obtained from the local soil conservation authority, land management agencies, or landowner. Incorporate recommended soil pH modifier and fertilizer into the top 2 inches of soil as soon as practicable after application.

### 3. Seeding Requirements

- a. Prepare a seedbed in disturbed areas to a depth of 3 to 4 inches using appropriate equipment to provide a firm seedbed. When hydroseeding, scarify the seedbed to facilitate lodging and germination of seed.

- b. Seed disturbed areas in accordance with written recommendations for seed mixes, rates, and dates obtained from the local soil conservation authority or the request of the landowner or land management agency. Seeding is not required in cultivated croplands unless requested by the landowner.

- c. Perform seeding of permanent vegetation within the recommended seeding dates. If seeding cannot be done within those dates, use appropriate temporary erosion

control measures discussed in section IV.F and perform seeding of permanent vegetation at the beginning of the next recommended seeding season. Dormant seeding or temporary seeding of annual species may also be used, if necessary, to establish cover, as approved by the Environmental Inspector. Lawns may be seeded on a schedule established with the landowner.

d. In the absence of written recommendations from the local soil conservation authorities, seed all disturbed soils within 6 working days of final grading, weather and soil conditions permitting, subject to the specifications in section V.D.3.a through V.D.3.c.

e. Base seeding rates on Pure Live Seed. Use seed within 12 months of seed testing.

f. Treat legume seed with an inoculant specific to the species using the manufacturer's recommended rate of inoculant appropriate for the seeding method (broadcast, drill, or hydro).

g. In the absence of written recommendations from the local soil conservation authorities, landowner, or land managing agency to the contrary, a seed drill equipped with a cultipacker is preferred for seed application.

Broadcast or hydroseeding can be used in lieu of drilling at double the recommended seeding rates. Where seed is broadcast, firm the seedbed with a cultipacker or roller after seeding. In rocky soils or where site conditions may limit the effectiveness of this equipment, other alternatives may be appropriate (e.g., use of a chain drag) to lightly cover seed after application, as approved by the Environmental Inspector.

## VI. Off-Road Vehicle Control

To each owner or manager of forested lands, offer to install and maintain measures to control unauthorized vehicle access to the right-of-way.

These measures may include:

- A. signs;
- B. fences with locking gates;
- C. slash and timber barriers, pipe barriers, or a line of boulders across the right-of-way; and
- D. conifers or other appropriate trees or shrubs across the right-of-way.

## VII. Post-Construction Activities and Reporting

### A. Monitoring and Maintenance

1. Conduct follow-up inspections of all disturbed areas, as necessary, to determine the success of revegetation and address landowner concerns. At a minimum, conduct inspections after the first and second growing seasons.
2. Revegetation in non-agricultural areas shall be considered successful if upon visual survey the density and cover of non- nuisance vegetation are similar in density and cover to adjacent undisturbed lands. In agricultural areas, revegetation shall be considered successful when upon visual survey, crop growth and vigor are similar to adjacent undisturbed portions of the same field, unless the easement agreement specifies otherwise.  
Continue revegetation efforts until revegetation is successful.
3. Monitor and correct problems with drainage and irrigation systems resulting from pipeline construction in agricultural areas until restoration is successful.
4. Restoration shall be considered successful if the right-of-way surface condition is similar to adjacent undisturbed lands, construction debris is removed (unless otherwise approved by the landowner or land managing agency per section V.A.6), revegetation is successful, and proper drainage has been restored.
5. Routine vegetation mowing or clearing over the full width of the permanent right-of-way in uplands shall not be done more frequently than every 3 years. However, to facilitate periodic corrosion/leak surveys, a corridor not exceeding 10 feet in width centered on the pipeline may be cleared at a frequency necessary to maintain the 10-foot corridor in an herbaceous state. In no case shall routine vegetation mowing or clearing occur during the migratory bird nesting season between April 15 and August 1 of any year unless specifically approved in writing by the responsible land management agency or the U.S. Fish and Wildlife Service.
6. Efforts to control unauthorized off-road vehicle use, in cooperation with the landowner, shall continue throughout the life of the project. Maintain signs, gates, and permanent access roads as necessary.

### B. Reporting

1. The project sponsor shall maintain records that identify by milepost:
  - a. method of application, application rate, and type of fertilizer, pH modifying agent, seed, and mulch used;

- b. acreage treated;
- c. dates of backfilling and seeding;
- d. names of landowners requesting special seeding treatment and a description of the follow-up actions;
- e. the location of any subsurface drainage repairs or improvements made during restoration; and
- f. any problem areas and how they were addressed.

2. The project sponsor shall file with the Secretary quarterly activity reports documenting the results of follow-up inspections required by section VII.A.1; any problem areas, including those identified by the landowner; and corrective actions taken for at least 2 years following construction.

The requirement to file quarterly activity reports with the Secretary does not apply to projects constructed under the automatic authorization, prior notice, or advanced notice provisions in the FERC's regulations.

## 9. REFERENCES

---

- Virginia Administrative Code. 2020a. 9VAC25-870-69. Off-site Compliance Options. <https://law.lis.virginia.gov/admincode/title9/agency25/chapter870/section69/>. Accessed June 2020.
- Virginia Administrative Code. 2020b. 9VAC25-840-60. Off-site Compliance Options. <https://law.lis.virginia.gov/admincode/title9/agency25/chapter840/section60/>. Accessed June 2020.
- Virginia Administrative Code. 2020c. 9VAC25-870-112. Off-site Compliance Options. <https://law.lis.virginia.gov/admincode/title9/agency25/chapter870/section112/>. Accessed June 2020.
- Virginia Administrative Code. 2020d. 9VAC25-840-50. Off-site Compliance Options. <https://law.lis.virginia.gov/admincode/title9/agency25/chapter840/section50/>. Accessed June 2020.



**ALTERNATIVE BEST MANAGEMENT PRACTICES (BMP)**  
**APPENDIX A**

---

**Diversion Fence (DF)**

## **C-9 STANDARDS AND SPECIFICATIONS**

### **FOR**

### **DIVERSION FENCE**

#### **Definition**

A temporary barrier of impermeable sheeting over chain link fence located in such a manner as to direct water to a desired location.

#### **Purpose**

To direct sediment-laden runoff to a sediment trapping practice, or to intercept and divert clear water away from disturbed areas.

#### **Conditions Where Practice Applies**

Constructed along the limit of disturbance (LOD) or across disturbed areas, a diversion fence is used when there is insufficient space to construct an earth dike, temporary swale, or perimeter dike swale.

Appropriate uses of diversion fences include the following:

1. To divert sediment-laden runoff from a disturbed area to a sediment trapping practice.
2. To segment drainage areas for reducing acreage to sediment control practices.
3. To divert clear water from an undisturbed area to a stable outlet at non-erosive velocities.

#### **Design Criteria**

1. The maximum slope along fence is 10 percent.
2. The maximum drainage area is 2 acres.
3. For drainage areas larger than 2 acres, an engineering design may be used based on the 2-year frequency storm with NRCS methodologies (i.e., TR-55, TR-20), assuming the worst soil cover conditions to prevail in the contributing drainage area over the life of the diversion fence.
4. Maintain positive drainage along the entire length of the diversion fence. Spot elevations must be provided for diversion fence having longitudinal slopes flatter than 1%.
5. Discharge velocities from diversion fence must be non-erosive.
6. Where diversion fence is used to convey runoff from disturbed areas, the discharge must be to a sediment control practice suitable for concentrated flow. Silt fence and super silt fence are unacceptable for receiving discharges from diversion fence.
7. Where diversion fence is used to convey clear water runoff, the discharge must be to an undisturbed, stable area at a non-erosive velocity (4 fps); otherwise, provide outlet protection.
8. When diversion fence is used in conjunction with a sediment trapping device, sequence construction

so that the diversion fence installation follows completion of the sediment trapping device(s).

#### Maintenance

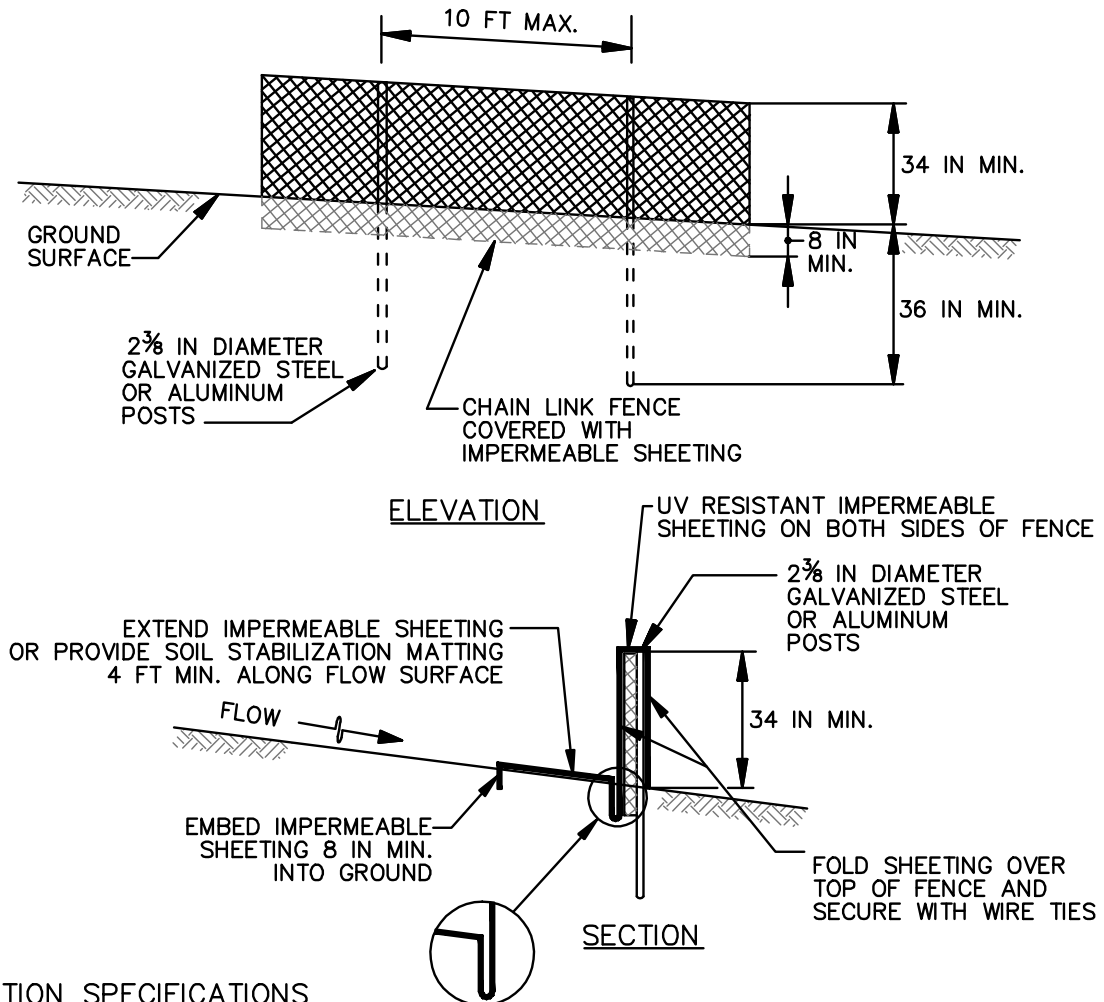
The flow surface along the diversion fence and at the point of discharge must be kept free of erosion. Accumulated sediment and debris must be removed and positive drainage maintained. Impermeable sheeting must be replaced if torn. If undermining occurs, reinstall fence.

# DETAIL C-9 DIVERSION FENCE

STANDARD SYMBOL

— DF —

MAXIMUM DRAINAGE AREA = 2 ACRES



## CONSTRUCTION SPECIFICATIONS

1. USE 42 INCH HIGH, 9 GAUGE OR THICKER CHAIN LINK FENCING (2 $\frac{3}{8}$  INCH MAXIMUM OPENING).
2. USE 2 $\frac{3}{8}$  INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. THE POSTS DO NOT NEED TO BE SET IN CONCRETE.
3. FASTEN CHAIN LINK FENCE SECURELY TO THE FENCE POSTS WITH WIRE TIES.
4. SECURE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING TO CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT TOP, MID SECTION, AND BELOW GROUND SURFACE.
5. EXTEND SHEETING A MINIMUM OF 4 FEET ALONG FLOW SURFACE AND EMBED END A MINIMUM OF 8 INCHES INTO GROUND. SOIL STABILIZATION MATTING MAY BE USED IN LIEU OF IMPERMEABLE SHEETING ALONG FLOW SURFACE.
6. WHEN TWO SECTIONS OF SHEETING ADJOIN EACH OTHER, OVERLAP BY 6 INCHES AND FOLD WITH SEAM FACING DOWNGRADE.
7. KEEP FLOW SURFACE ALONG DIVERSION FENCE AND POINT OF DISCHARGE FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE. REPLACE IMPERMEABLE SHEETING IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE  
NATURAL RESOURCES CONSERVATION SERVICE

2011

MARYLAND DEPARTMENT OF ENVIRONMENT  
WATER MANAGEMENT ADMINISTRATION

**ALTERNATIVE BEST MANAGEMENT PRACTICES (BMP)**  
**APPENDIX B**

---

**Super Silt Fence (SSF)**



**SILT FENCE (FILTER FABRIC FENCE) - Sediment Removal Efficiency: LOW.** This device is not an ABACT for special protection watersheds. However, it may be used to increase the efficiency of another BMP which is an ABACT (e.g. vegetated filter strip). Silt fence may be used to control runoff from small disturbed areas when it is in the form of sheet flow, and the discharge is to a stable area. Only those fabric types specified for such use by the manufacturer should be used. In order to provide sufficient fabric for proper anchoring of the fence, standard filter fabric width should be 30" min.; reinforced and super filter fabric width should be 42" min.

York County Conservation District

Do not use silt fence in areas of concentrated flows (e.g. channels, swales, erosion gullies, across pipe outfalls, as inlet protection, etc.). **Filter fabric should not be wrapped around the principal spillway risers of sediment basins or traps.**

Silt fence should not be used in areas where rock or rocky soils prevent the full and uniform anchoring of the fence. Forested areas are not recommended unless tree roots can be severed during excavation of the anchor trench.

At a minimum, the fabric should have the properties shown in Table 4.3:

**TABLE 4.3**  
**Fabric Properties for Silt Fence**

<b>Fabric Property</b>	<b>Minimum Acceptable Value</b>	<b>Test Method</b>
Grab Tensile Strength (lb)	120	ASTM D1682
Elongation at Failure (%)	20% Max.	ASTM D1682
Mullen Burst Strength (psi)	200	ASTM D 3786
Trapezoidal Tear Strength (lb)	50	
Puncture Strength (lb)	40	ASTM D 751 (modified)
Slurry Flow Rate (gal/min/sf)	0.3	ASTM 5141
Equivalent Opening Size	30	US Std. Sieve CW-02215
Ultraviolet Radiation Stability (%)	80	ASTM G-26

Adapted from New York DEC and PennDOT Pub 408

Silt fence should not be installed on uncompacted fills or in extremely loose soils (e.g. sandy loam), since this will likely result in undermining of the fence.

Silt fence should be installed at existing level grade. Both ends of each fence section should be extended at least 8 feet upslope across undisturbed ground at 45 degrees to the main fence alignment to allow for pooling of water.

A 6" deep trench should be excavated, minimizing the disturbance on the downslope side. The bottom of the trench should be at level grade. **NOTE:** Standard silt fence may be installed using the slicing

method provided manufacturer's recommendations are followed. Where this method is chosen, show all standard details and instructions provided by the manufacturer on the plan drawings.

Support stakes that are 2" X 2" ( $\pm 3/8$ ") hardwood (minimum cross-sectional area of 3.0 square inches) or equivalent steel (U or T weighing not less than 1.33 pound per linear foot) should be driven 18" below the existing ground surface at 8-foot (max.) intervals (see Standard Construction Detail # 4-7). The filter fabric should be stretched and fastened to the upslope side of the support stakes.

Wherever reinforced silt fence is installed, the reinforcement mesh should be fastened to the stakes prior to the fabric (Standard Construction Detail # 4-8).

At fabric ends, both ends should be wrapped around the support stake and stapled. If the fabric comes already attached to the stakes, the end stakes should be held together while the fabric is wrapped around the stakes at least one revolution (360 degrees) prior to driving the stakes.

The bottom of the fence should be anchored by placing the fabric in the bottom of the trench, then backfilling and compacting the fill material in the trench (an acceptable alternative is the use of a machine which slices the soil to a depth of at least 6 inches and inserts the fabric in a continuous operation.)

Guy wires should be attached to the support stakes of reinforced silt fence (Standard Construction Detail # 4-8). An acceptable alternative to the guy wires is to stake a continuous row of straw bales on the downslope side of the fence (Standard Construction Detail # 4-9).

Silt fence alignment should be at least 8' from the toe of fill slopes.

The maximum slope length — in both existing and final grade — above standard (18"), reinforced (30") or super silt fence should not exceed that shown in Table 4.4 or Figure 4.3. The slope length shown is the distance from the fence to the drainage divide or the nearest upslope channel. **NOTE: Slope length cannot be addressed by use of multiple rows of silt fence.**

**TABLE 4.4**  
**Maximum Slope Length for Silt Fence**

Slope - Percent	Maximum Slope Length (ft) Above Fence		
	Standard (18" High) Silt Fence	Reinforced (30" High) Silt Fence	Super Silt Fence
2 (or less)	150	500	1000
5	100	250	550
10	50	150	325
15	35	100	215
20	25	70	175
25	20	55	135
30	15	45	100
35	15	40	85
40	15	35	75
45	10	30	60
50	10	25	50

PA DEP

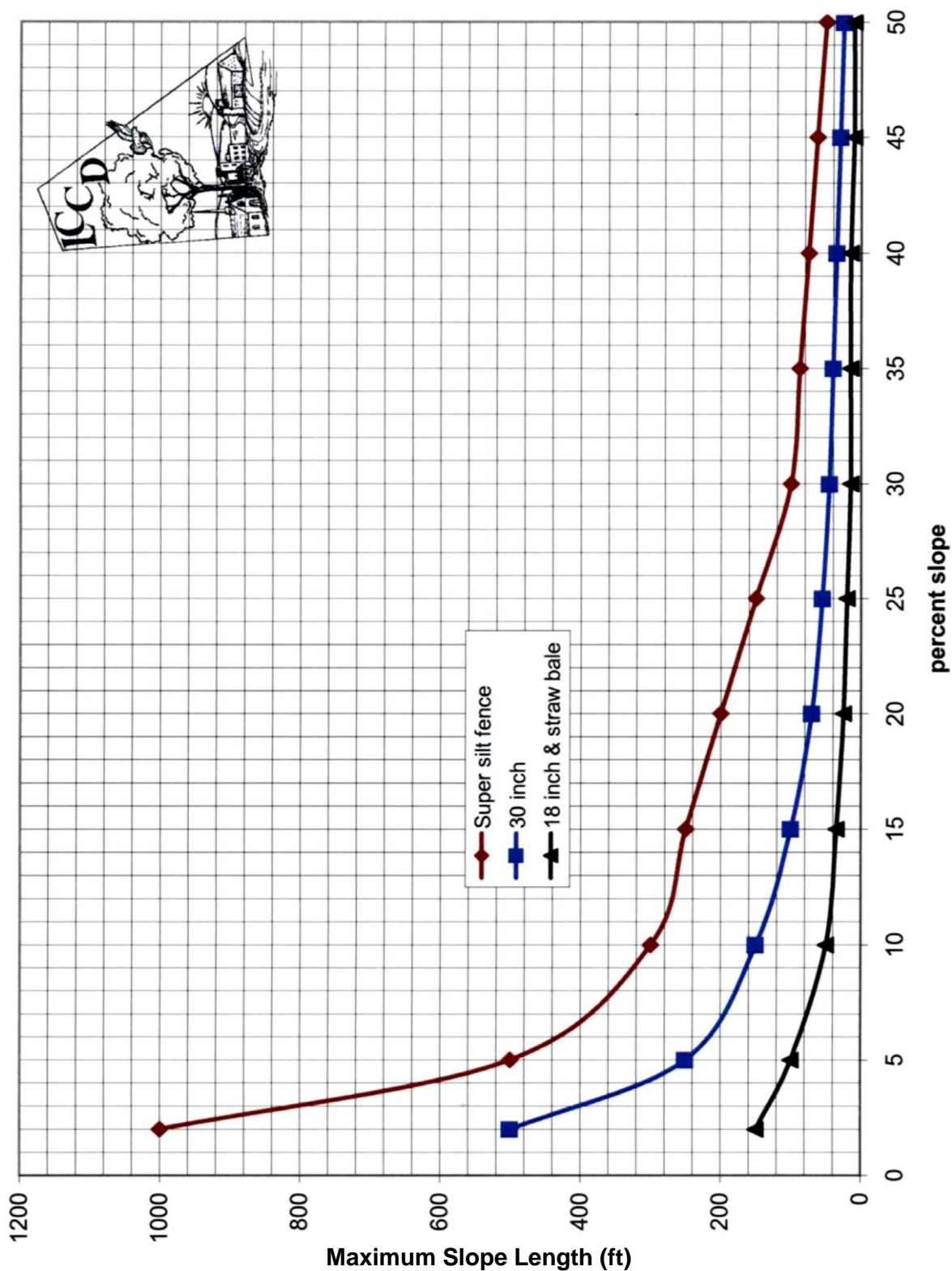
Wherever there is a break or change in slope above the silt fence, the maximum allowable slope length should be determined by the following method:

- (a) Determine the length and percent of the slope segment immediately above the fence.
- (b) Subtract the length of this segment from the allowable slope length for that percent slope shown in Table 4.4. If the result is positive, find the percentage of the allowable slope length that has been used ( $\text{slope length} \div \text{allowable slope length}$ ).
- (c) Subtract the result from 1.00 to determine the unused percentage of allowable slope length.
- (d) Determine the maximum allowable slope length for the percent slope of the remaining segment from Table 4.4.
- (e) Multiply this allowable slope length by the remainder from step (c) above.
- (f) Add the result from step (b) to that from step (e). This is the maximum allowable slope length for the entire slope.

Silt fence should be inspected weekly and after each runoff event. Needed repairs should be initiated immediately after the inspection.

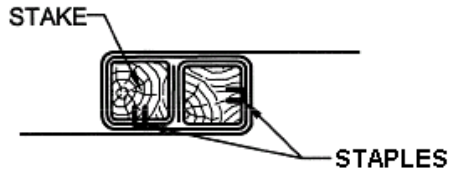


**FIGURE 4.3**  
**Maximum Permissible Slope Length above Silt Fence and Straw Bale Barriers**

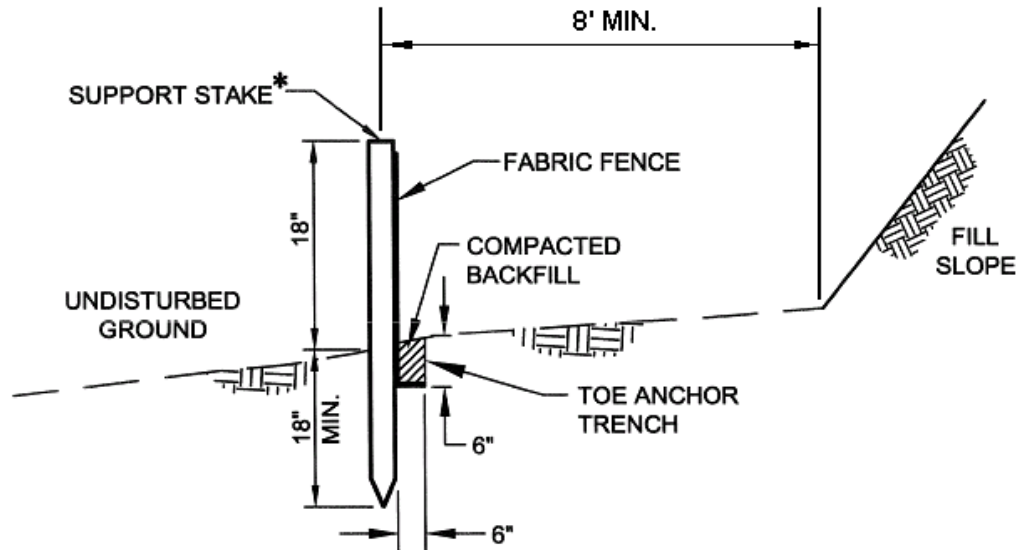


## STANDARD CONSTRUCTION DETAIL # 4-7 Standard Silt Fence (18" High)

\*STAKES SPACED @ 8' MAX.  
USE 2" x 2" ( $\pm 3/8"$ ) WOOD  
OR EQUIVALENT STEEL  
(U OR T) STAKES



### JOINING FENCE SECTIONS



### ELEVATION VIEW

PA DEP

Fabric shall have the minimum properties as shown in Table 4.3.

Fabric width shall be 30" minimum. Stakes shall be hardwood or equivalent steel (U or T) stakes.

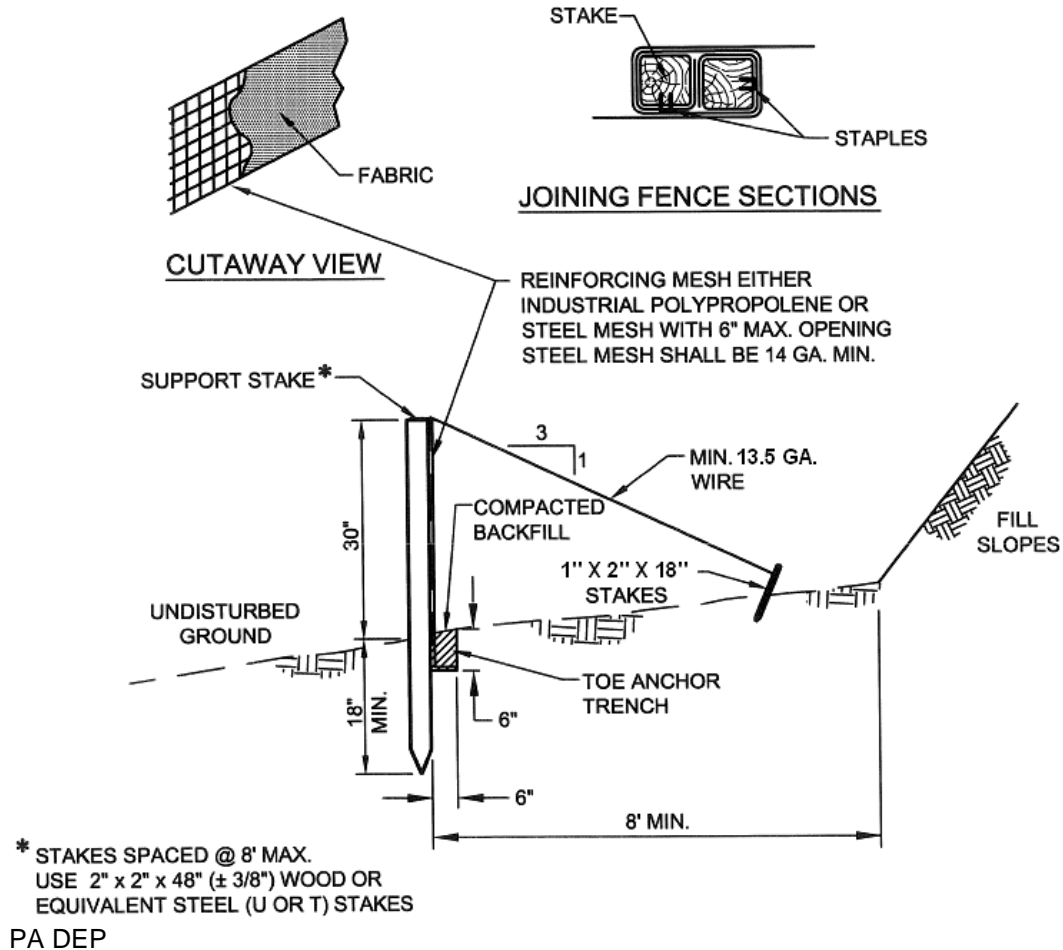
Silt fence shall be placed at level existing grade. Both ends of the fence shall be extended at least 8 feet up slope at 45 degrees to the main fence alignment (see Figure 4.1).

Sediment shall be removed when accumulations reach half the aboveground height of the fence.

Any section of silt fence which has been undermined or topped shall be immediately replaced with a rock filter outlet (Standard Construction Detail # 4-6).

Fence shall be removed and properly disposed of when tributary area is permanently stabilized.

## STANDARD CONSTRUCTION DETAIL # 4-8 Reinforced Silt Fence (30" High)



Fabric shall have the minimum properties as shown in Table 4.3.

Fabric width shall be 42" minimum. Stakes shall be hardwood or equivalent steel (U or T) stakes. An 18" support stake shall be driven 12" minimum into undisturbed ground.

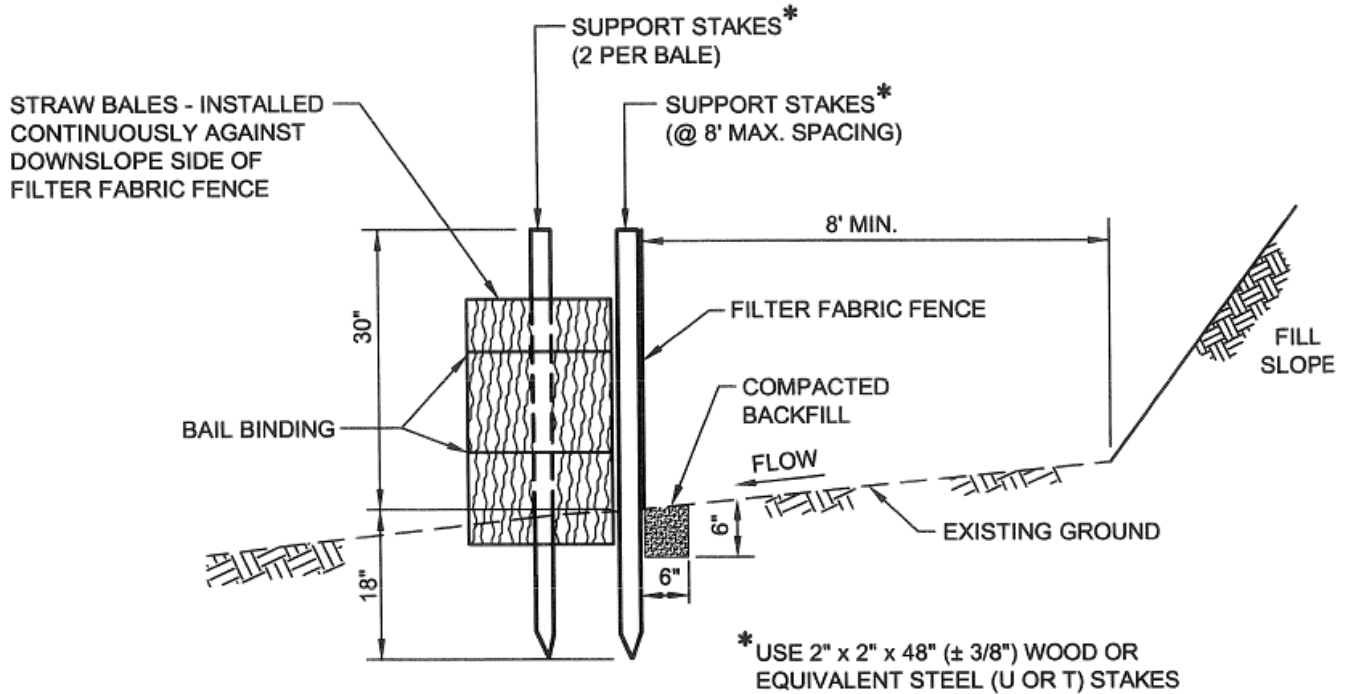
Silt fence shall be installed at existing level grade. Both ends of each fence section shall be extended at least 8 feet upslope at 45 degrees to the main fence alignment (Figure 4.1).

Sediment shall be removed where accumulations reach half the aboveground height of the fence.

Any section of silt fence which has been undermined or topped shall be immediately replaced with a rock filter outlet (Standard Construction Detail # 4-6).

Fence shall be removed and properly disposed of when tributary area is permanently stabilized.

## STANDARD CONSTRUCTION DETAIL # 4-9 Silt Fence Reinforced by Staked Straw Bales



PA DEP

Fabric shall have the minimum properties as shown in Table 4.3.

This BMP is not suitable for projects lasting longer than 3 months unless bales are replaced quarterly.

Fabric width shall be 42" minimum. Stakes shall be hardwood or equivalent steel (U or T) stakes.

Silt fence shall be installed at existing level grade. Both ends of each fence section shall be extended at least 8 feet upslope at 45 degrees to the main fence alignment (Figure 4.1).

Sediment shall be removed where accumulations reach half the aboveground height of the fence.

Any fence section which has been undermined or topped shall be immediately replaced with a rock filter outlet (Standard Construction Detail # 4-6).

Fence shall be removed and properly disposed of when tributary area is permanently stabilized.



SUPER SILT FENCE (SUPER FILTER FABRIC FENCE) - **Sediment Removal Efficiency: LOW.** This device is not an ABACT for special protection watersheds. However, it may be used with another BMP that is an ABACT (e.g. vegetated filter strip) to make it more effective. Super silt fence may be used to control runoff from some small disturbed areas where the maximum slope lengths for reinforced silt fence cannot be met and sufficient room for construction of sediment traps or basins does not exist.



PA DEP

Only those fabric types specified for use as silt fence by the manufacturer should be used.

The maximum slope length — in both existing and final grade — above any super silt fence should not exceed that shown in Table 4.4 or Figure 4.3. The slope length shown is the distance from the fence to the drainage divide or the nearest upslope channel. **NOTE: Slope length is not increased by use of multiple rows of super silt fence.**

Super silt fence should not be used in areas where rock or rocky soils prevent the full and uniform anchoring of the fence or proper installation of the fence posts. It should be used only where access exists or can be made for the construction equipment required to install and remove the chain link fencing (e.g. trencher and posthole drill).

Super silt fence should be installed at level grade. Both ends of each fence section should be extended at least 8 feet upslope at 45 degrees to the main fence alignment to allow for pooling of water (see Figure 4.1).

Super silt fence should be installed according to the details shown in Standard Construction Detail # 4-10.

An 8" deep trench should be excavated, minimizing the disturbance on the downslope side. The bottom of the trench should be at level grade.

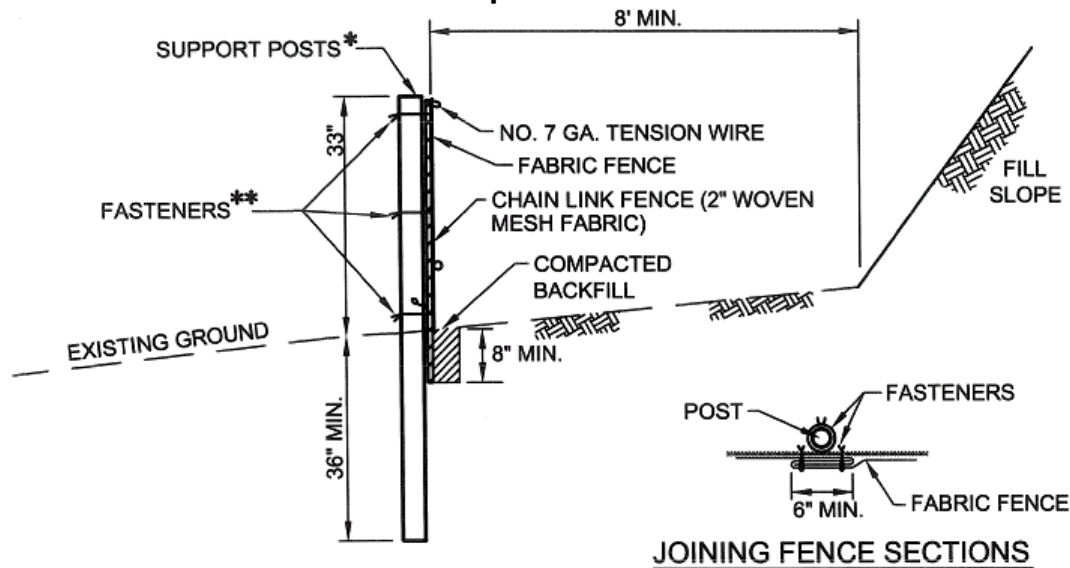
A chain link fence should be installed in the downslope side of the trench with the fence on the upslope side of the support poles. Poles should be 2 ½" diameter galvanized or aluminum posts set at 10' maximum spacing. Poles should be installed a minimum 36" below the ground surface and extend a minimum of 33" aboveground. A posthole drill is necessary to do this for most sites. Poles do not need to be set in concrete. No. 7 gage tension wire should be installed horizontally through holes at top and bottom of chain-link fence or attached with hog rings at 5' (max.) centers.

Filter fabric should be stretched and securely fastened to the fence with wire fasteners, staples, or preformed clips. The fabric should extend a minimum of 33" above the ground surface.

At fabric ends, both ends should be overlapped a minimum of 6", folded, and secured to the fence (Standard Construction Detail # 4-10). The fabric toe should be placed in the bottom of the trench, backfilled, and compacted.

## STANDARD CONSTRUCTION DETAIL # 4-10

### Super Silt Fence



\* POSTS SPACED @ 10' MAX. USE 2 1/2" DIA. HEAVY DUTY GALVANIZED OR ALUMINUM POSTS.

\*\* CHAIN LINK TO POST FASTENERS SPACED @ 14" MAX. USE NO. 9 GA. ALUMINUM WIRE OR NO. 9 GALVANIZED STEEL PRE-FORMED CLIPS. CHAIN LINK TO TENSION WIRE FASTENERS SPACED @ 60" MAX. USE NO. 13.5 GA. GALVANIZED STEEL WIRE. FABRIC TO CHAIN FASTENERS SPACED @ 24" MAX C. TO C.

PA DEP

Fabric shall have the minimum properties as shown in Table 4.3.

Filter fabric width shall be 42" minimum.

Posts shall be installed using a posthole drill.

Chain link shall be galvanized No. 11.5 Ga. steel wire with 2 1/4" opening, No. 11 Ga. aluminum coated steel wire in accordance with ASTM-A-491, or galvanized No. 9 Ga. steel wire top and bottom with galvanized No. 11 Ga. steel intermediate wires. No. 7 gage tension wire to be installed horizontally through holes at top and bottom of chain-link fence or attached with hog rings at 5' (max.) centers.

Silt fence shall be placed at existing level grade. Both ends of the fence shall be extended at least 8 feet upslope at 45 degrees to main barrier alignment (Figure 4.1).

Sediment shall be removed when accumulations reach half the aboveground height of the fence.

Fence shall be removed and properly disposed of when tributary area is permanently stabilized.

ALTERNATIVE BEST MANAGEMENT PRACTICES (BMP)  
APPENDIX C

---

## Rock Filter Outlet (RFO)



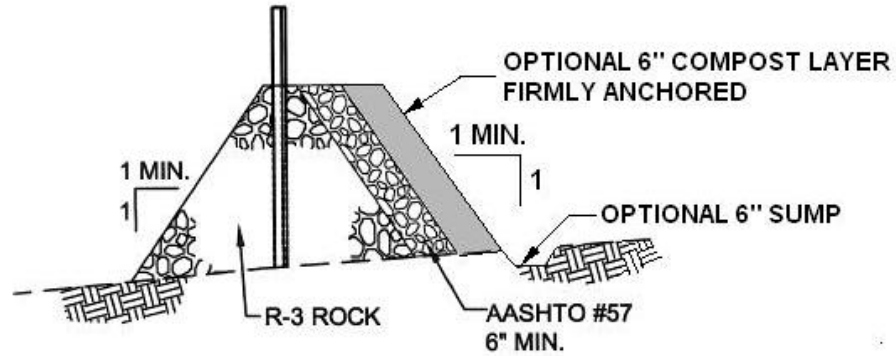
**ROCK FILTER OUTLET - Sediment Removal Efficiency: LOW. This device is not an ABACT for special protection watersheds.** Rock filter outlets may be used to address problems of concentrated flows to sediment barriers. Wherever a sediment barrier has failed due to an unanticipated concentrated flow, a rock filter outlet should be installed unless that concentrated flow can be otherwise directed away from the barrier.



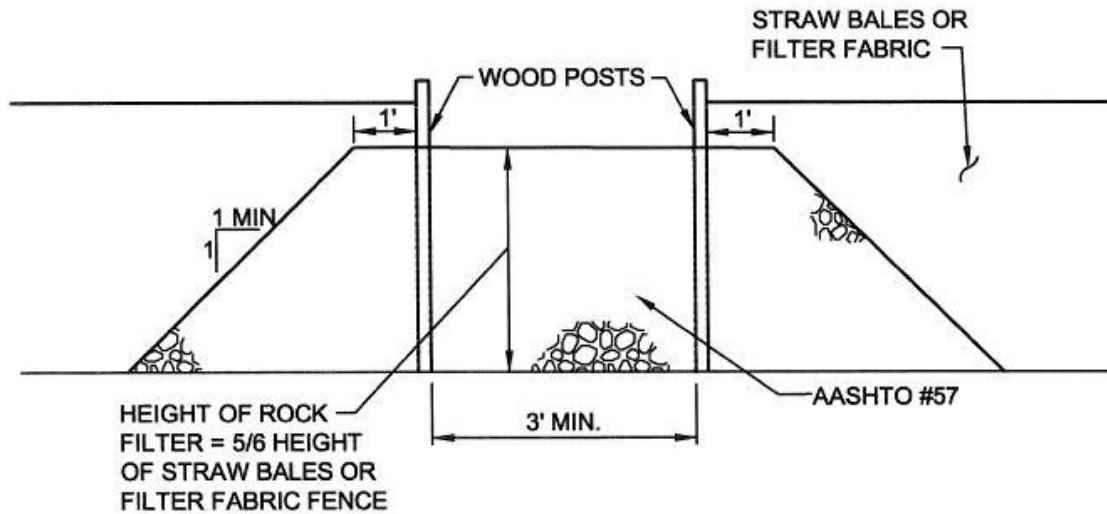
Westmoreland Conservation District

In special protection watersheds — HQ or EV — or where additional water filtering is desired, a 6 inch layer of compost should be added and anchored on top of the upslope side of the AASHTO #57 stone. A 6-inch deep sump may be installed immediately upslope of the rock filter outlet to provide additional sediment removal capacity.

# **STANDARD CONSTRUCTION DETAIL # 4-6** **Rock Filter Outlet**



**OUTLET CROSS-SECTION**



**UP-SLOPE FACE**

PA DEP

A rock filter outlet shall be installed where failure of a silt fence or straw bale barrier has occurred due to concentrated flow. Anchored compost layer shall be used on upslope face in HQ and EV watersheds.

Sediment shall be removed when accumulations reach 1/3 the height of the outlet.

**ALTERNATIVE BEST MANAGEMENT PRACTICES (BMP)**  
**APPENDIX D**

---

**Filter Bag (FB)**

**DEWATERING WORK AREAS** - Wherever water is pumped from a disturbed area, it must be treated for sediment removal prior to discharging to a surface water unless it can be shown that the quality of the water being pumped already meets discharge standards. If a properly functioning sediment basin or sediment trap is available, the pump discharge may be routed through the trap or basin. While pumping, the maximum water level in the trap or basin should not exceed the cleanout elevation. Water pumped from disturbed areas may not be discharged directly to detention ponds, since they are not designed to be efficient sediment removal structures. Straw bale structures and filter fabric structures are not acceptable for filtering pumped water due to their history of ineffectiveness. Filter bags, as shown in Standard Construction Detail #3-16, and Sump Pits, as shown in Standard Construction Detail #3-17, may be used to filter pumped water as described in the following section. Other devices for filtering water pumped from excavations will be reviewed on a case-by-case basis.

The topography and conditions of the ground cover between the discharge point and the receiving surface water should be evaluated for potential erosion. Appropriate stabilization measures should be incorporated where needed to prevent erosion.

**No filtering device is required for water pumped directly from a stream channel as part of a pump-around bypass system.**

**PUMPED WATER FILTER BAG** - **Sediment Removal Efficiency: LOW. This device is not an ABACT for special protection watersheds unless surrounded by a compost sock ring or operated in conjunction with a sump pit.** Filter bags may be used to filter water pumped from disturbed areas prior to discharging to surface waters. They may also be used to filter water pumped from the sediment storage areas of sediment basins and sediment traps.



Northampton County Conservation District

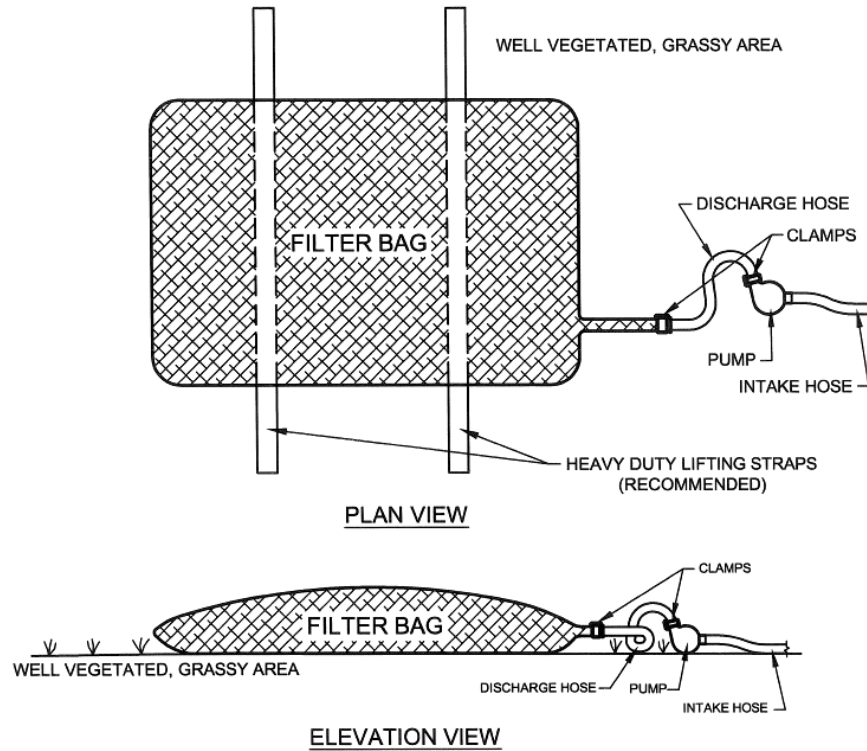
The maximum pumping rate for any bag in use or proposed for use on a site should be available at the site at all times during pumping operations. Pumping rates will vary depending on the size of the filter bag, and the type and amount of sediment discharged to the bag.

Filter bags should be installed according to the details shown in Standard Construction Detail #3-16.



## STANDARD CONSTRUCTION DETAIL # 3-16

### Pumped Water Filter Bag



PA DEP

Low volume filter bags shall be made from non-woven geotextile material sewn with high strength, double stitched “J” type seams. They shall be capable of trapping particles larger than 150 microns. High volume filter bags shall be made from woven geotextiles that meet the following standards:

Property	Test Method	Minimum Standard
Avg. Wide Width Strength	ASTM D-4884	60 lb/in
Grab Tensile	ASTM D-4632	205 lb
Puncture	ASTM D-4833	110 lb
Mullen Burst	ASTM D-3786	350 psi
UV Resistance	ASTM D-4355	70%
AOS % Retained	ASTM D-4751	80 Sieve

A suitable means of accessing the bag with machinery required for disposal purposes shall be provided. Filter bags shall be replaced when they become  $\frac{1}{2}$  full of sediment. Spare bags shall be kept available for replacement of those that have failed or are filled. Bags shall be placed on straps to facilitate removal unless bags come with lifting straps already attached.

Bags shall be located in well-vegetated (grassy) area, and discharge onto stable, erosion resistant areas. Where this is not possible, a geotextile underlayment and flow path shall be provided. Bags may be placed on filter stone to increase discharge capacity. Bags shall not be placed on slopes greater than 5%. For slopes exceeding 5%, clean rock or other non-erodible and non-polluting material may be placed under the bag to reduce slope steepness.

No downslope sediment barrier is required for most installations. Compost berm or compost filter sock shall be installed below bags located in HQ or EV watersheds, within 50 feet of any receiving surface water or where grassy area is not available.

**(Additional Notes for Standard Construction Detail # 3-16)**

The pump discharge hose shall be inserted into the bags in the manner specified by the manufacturer and securely clamped. A piece of PVC pipe is recommended for this purpose.

The pumping rate shall be no greater than 750 gpm or  $\frac{1}{2}$  the maximum specified by the manufacturer, whichever is less. Pump intakes shall be floating and screened.

Filter bags shall be inspected daily. If any problem is detected, pumping shall cease immediately and not resume until the problem is corrected.

**SUMP PIT - Sediment Removal Efficiency: LOW. This device is not an ABACT for special protection watersheds unless used in conjunction with a pumped water filter bag.** For sites where large volumes of water of low to moderate turbidity (i.e. not flowing from or through work areas) must be pumped from work areas, and many filter bags would be required, sump pits (Standard Construction Detail #3-17) can provide a means of filtering the water. They may also be used in conjunction with filter bags to reduce the amount of sediment being pumped into the bags, reducing the number of bags required. Sump pits used in conjunction with filter bags may also be used as an ABACT BMP in special protection watersheds. Sump pits should not be used alone where highly turbid waters are being pumped such as typically results from active work areas.

Sump pits should be located at a low point in the work area so that the water naturally drains toward the pit. The size of the pit required depends upon the amount of water that must be pumped from the work area and the space available.

When used in conjunction with a filter bag, the intake of the pump going to the filter bag should be inserted into the standpipe of the sump pit.

**ALTERNATIVE BEST MANAGEMENT PRACTICES (BMP)**  
**APPENDIX E**

---

**Compost Filter Sock (CFS)**

COMPOST FILTER SOCK - **Sediment Removal Efficiency: HIGH. This device is an ABACT for HQ and EV watersheds.** Compost filter socks are a type of contained compost filter berm. They consist of a biodegradable or photodegradable mesh tube filled, typically using a pneumatic blower, with a coarse compost filter media that meets certain performance criteria (e.g. hydraulic flow through rate, total solids removal efficiency, total suspended solids removal efficiency, turbidity reduction, nutrient removal efficiency, metals removal efficiency, and motor oil removal efficiency).



York County Conservation District

Compost filter socks are flexible and can be filled in place or in some cases filled and moved into position. They are especially useful on steep slopes. Heavy vegetation should be removed prior to installing the sock. Compost socks can also be used on rocky slopes if sufficient preparation is made to ensure good contact of the sock with the underlying soil along its entire length. They may also be used on pavement as a perimeter control. Socks used in this manner range in diameter from 8" to 32". **Note: The flat dimension of the sock should be at least 1.5 times the nominal diameter. Also, some settlement of the tube typically occurs after installation.** The nominal diameter of the tube is the dimension to be used for design purposes (i.e. Figure 4.2). Socks with diameters less than 12" should only be used for residential housing lots of ¼ acre or less that are tributary to a sediment basin or sediment trap.

As with other sediment barriers, filter socks should be placed parallel to contour with both ends of the sock extended upslope at a 45 degree angle to the rest of the sock to prevent end-arounds (Figure 4.1). Socks placed on earthen slopes should be anchored with stakes driven through the center of the sock (Standard Construction Detail #4-1) or immediately downslope of the sock at intervals recommended by the manufacturer. Where socks are placed on paved surfaces, concrete blocks should be used immediately downslope of the socks (at the same intervals recommended for the stakes) to help hold the sock in place.



The maximum slope length above a compost filter sock should not exceed those shown in Figure 4.2.  
**NOTE: Slope length is not addressed by use of multiple rows of compost socks.** The anticipated functional life of a biodegradable filter sock should be 6 months; for photodegradable socks it is 1 year. Some other types may last longer. Projects with disturbances anticipated to last longer than the functional life of a sock should plan to replace the socks periodically or use another type of BMP.

Upon stabilization of the tributary area, the filter sock may be left in place and vegetated or removed. In the latter case, the mesh is typically cut open and the mulch spread as a soil supplement. In either case, the stakes should be removed.

Filter socks using other fillers may be approved on a case-by-case basis if sufficient supporting information (including manufacturer's specs and independent test data) is provided. However, they might not qualify as ABACTs. Wherever compost socks are used, Table 4.1 should be placed on a detail sheet.

**TABLE 4.1**  
**Compost Sock Fabric Minimum Specifications**

Material Type	3 mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament Polypropylene (MFPP)	Heavy Duty Multi-Filament Polypropylene (HDMFPP)
Material Characteristics	Photo-degradable	Photo-degradable	Bio-degradable	Photo-degradable	Photo-degradable
Sock Diameters	12" 18"	12"	12"	12"	12"
		18"	18"	18"	18"
		24"	24"	24"	24"
		32"	32"	32"	32"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	1/8"
Tensile Strength		26 psi	26 psi	44 psi	202 psi
Ultraviolet Stability % Original Strength (ASTM G-155)	23% at 1000 hr.	23% at 1000 hr.		100% at 1000 hr.	100% at 1000 hr.
Minimum Functional Longevity	6 months	9 months	6 months	1 year	2 years
Two-ply systems					
Inner Containment Netting			HDPE biaxial net		
			Continuously wound		
			Fusion-welded junctures		
			3/4" X 3/4" Max. aperture size		
Outer Filtration Mesh			Composite Polypropylene Fabric (Woven layer and non-woven fleece mechanically fused via needle punch)		
			3/16" Max. aperture size		
Sock fabrics composed of burlap may be used on projects lasting 6 months or less.					

Filtrex & JMD

Compost should be a well decomposed, weed-free organic matter derived from agriculture, food, stump grindings, and yard or wood/bark organic matter sources. The compost should be aerobically composted. The compost should possess no objectionable odors and should be reasonably free (<1%

by dry weight) of man-made foreign matter. The compost product should not resemble the raw material from which it was derived. Wood and bark chips, ground construction debris or reprocessed wood products are not acceptable as the organic component of the mix.

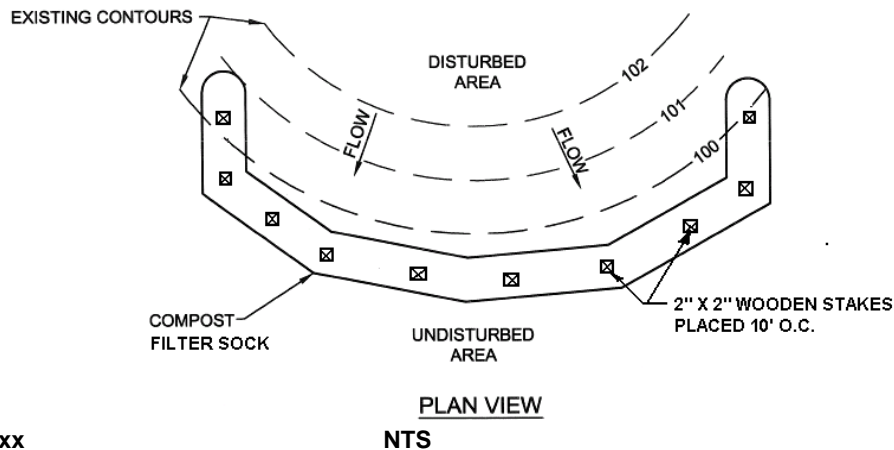
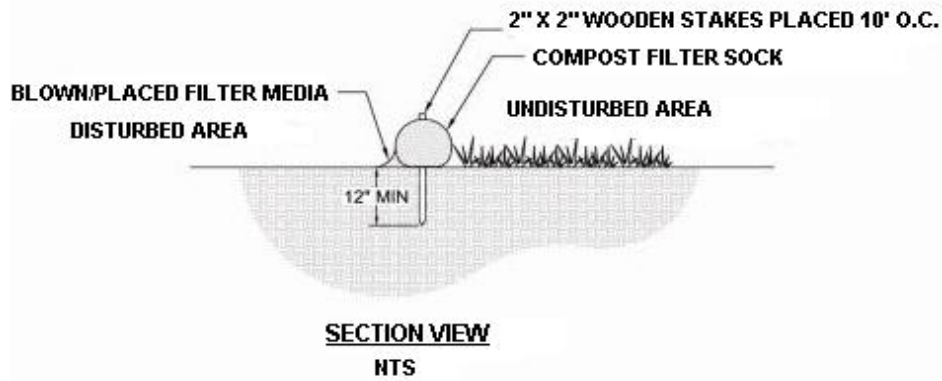
The physical parameters of the compost should comply with the standards in Table 4.2. The standards contained in the PennDOT Publication 408 are an acceptable alternative.

**TABLE 4.2**  
**Compost Standards**

Organic Matter Content	80% - 100% (dry weight basis)
Organic Portion	Fibrous and elongated
pH	5.5 - 8.0
Moisture Content	35% - 55%
Particle Size	98% pass through 1" screen
Soluble Salt Concentration	5.0 dS/m (mmhos/cm) Maximum

Filtrex

## STANDARD CONSTRUCTION DETAIL #4-1 COMPOST FILTER SOCK



Filtrexx

NTS

Sock fabric shall meet standards of Table 4.1. Compost shall meet the standards of Table 4.2.

Compost filter sock shall be placed at existing level grade. Both ends of the sock shall be extended at least 8 feet up slope at 45 degrees to the main sock alignment (Figure 4.1). Maximum slope length above any sock shall not exceed that shown on Figure 4.2. Stakes may be installed immediately downslope of the sock if so specified by the manufacturer.

Traffic shall not be permitted to cross filter socks.

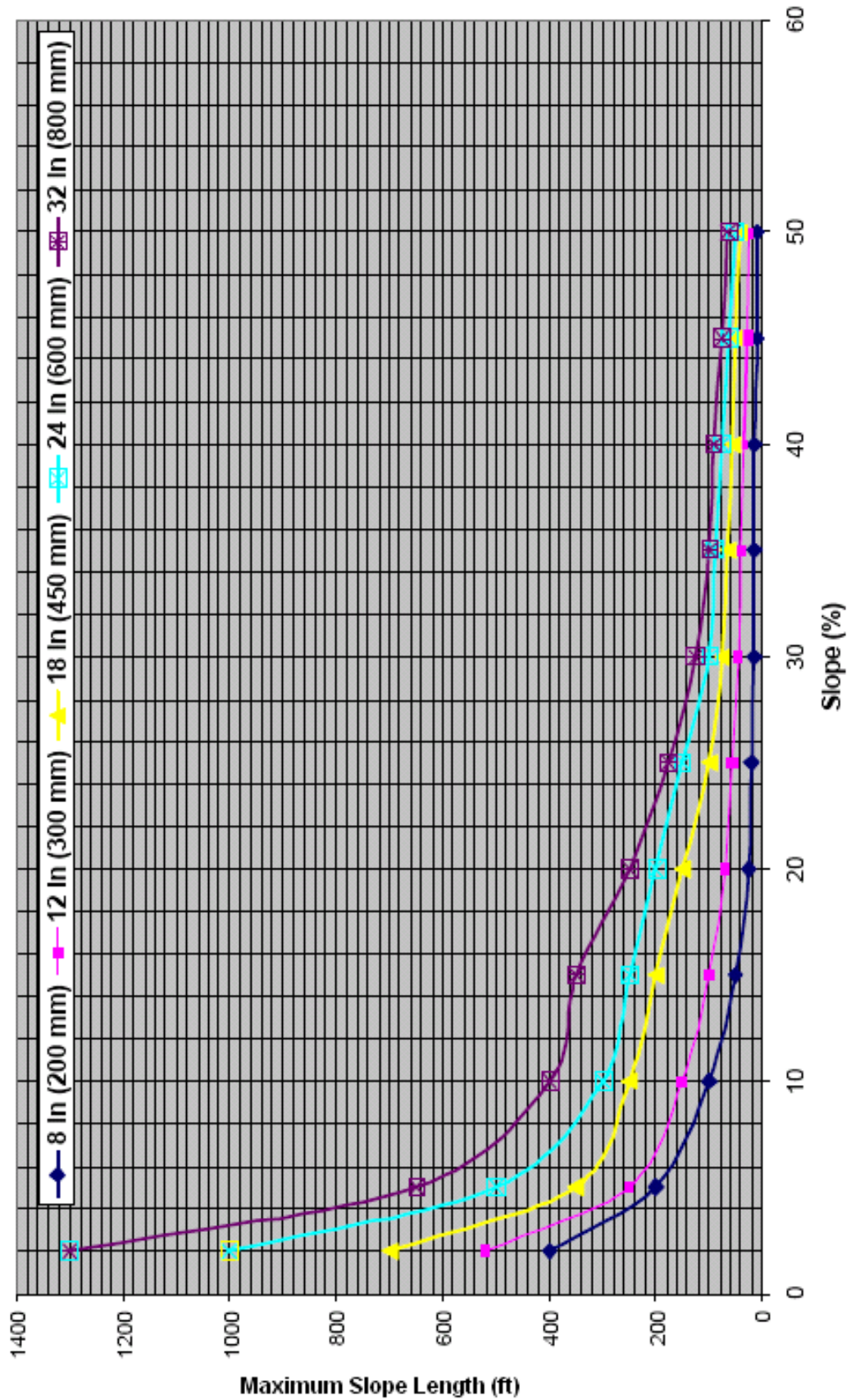
Accumulated sediment shall be removed when it reaches half the aboveground height of the sock and disposed in the manner described elsewhere in the plan.

Socks shall be inspected weekly and after each runoff event. Damaged socks shall be repaired according to manufacturer's specifications or replaced within 24 hours of inspection.

Biodegradable filter socks shall be replaced after 6 months; photodegradable socks after 1 year. Polypropylene socks shall be replaced according to manufacturer's recommendations.

Upon stabilization of the area tributary to the sock, stakes shall be removed. The sock may be left in place and vegetated or removed. In the latter case, the mesh shall be cut open and the mulch spread as a soil supplement.

**FIGURE 4.2**  
**MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS**



**NOTE:** 8" diameter socks should only be used to control small ( $\leq \frac{1}{4}$  acre) disturbed areas on individual house lots).

Adapted from Filtrexx

**ALTERNATIVE BEST MANAGEMENT PRACTICES (BMP)**  
**APPENDIX F**

---

**Wash Rack Option**

## **B-2 STANDARDS AND SPECIFICATIONS**

### **FOR**

### **WASH RACK OPTION**

#### **Definition**

A system used in conjunction with a stabilized construction entrance (SCE) for washing mud off construction vehicle wheels.

#### **Purpose**

To reduce tracking wherever conditions require washing the construction vehicle wheels prior to exiting the site.

#### **Conditions Where Practice Applies**

SCE with wash racks are located at points of ingress and egress where tracking of mud and sediment cannot be removed through the use of conventional maintenance practices (e.g., sweeping, vacuuming, etc.).

#### **Design Criteria**

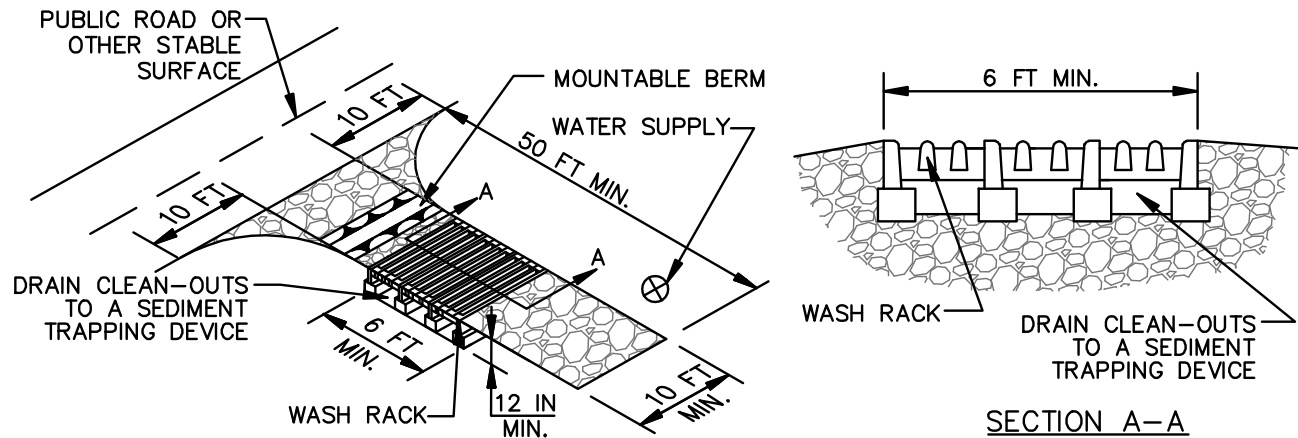
1. SCE with wash rack must drain to an approved sediment trapping device.
2. SCE with wash rack cannot be installed over existing pavement.
3. Wash rack must be designed of material that is constructed and manufactured to withstand the anticipated traffic loads. Wash racks may be of concrete, steel, or other materials.

#### **Maintenance**

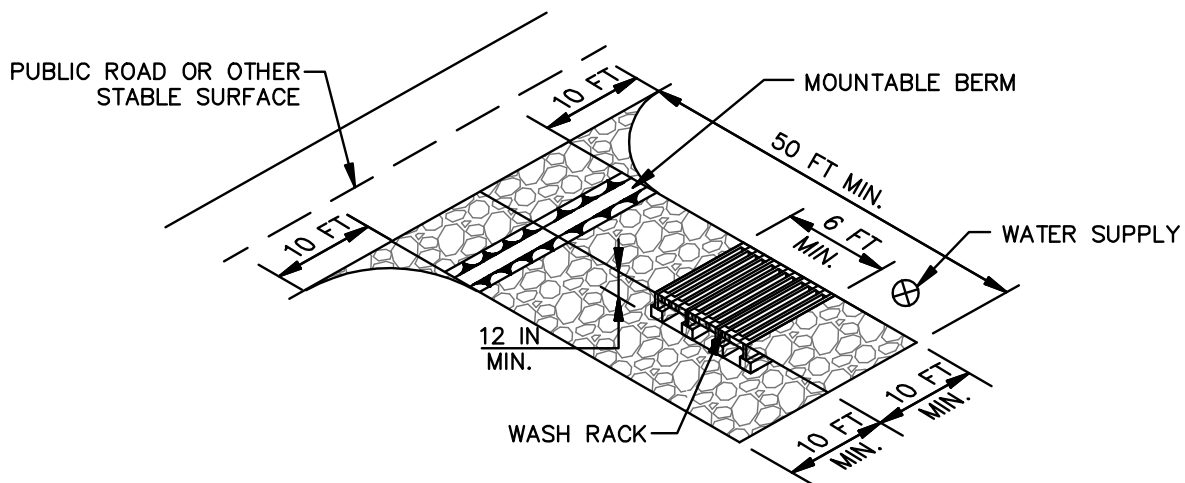
The area under the wash rack must be maintained free of accumulated sediment. If damaged, the wash rack must be repaired or replaced.

## DETAIL B-2 WASH RACK OPTION

STANDARD SYMBOL



ISOMETRIC VIEW – WASH RACK IN SCE



ISOMETRIC VIEW- WASH RACK ALONG SCE

### CONSTRUCTION SPECIFICATIONS

1. USE A WASH RACK DESIGNED AND CONSTRUCTED/MANUFACTURED FOR THE ANTICIPATED TRAFFIC LOADS. CONCRETE, STEEL, OR OTHER MATERIALS ARE ACCEPTABLE. PRE-FABRICATED UNITS SUCH AS CATTLE GUARDS ARE ACCEPTABLE. USE MINIMUM DIMENSION OF 6 FEET x 10 FEET. ORIENT DIRECTION OF RIBS AS SHOWN ON THE DETAIL.
2. INSTALL PRIOR TO, ALONG SIDE OF, OR AS PART OF THE SCE.
3. DIRECT WASH WATER TO AN APPROVED SEDIMENT TRAPPING DEVICE.
4. KEEP AREA UNDER WASH RACK FREE OF ACCUMULATED SEDIMENT. IF DAMAGED, REPAIR OR REPLACE WASH RACK.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE  
NATURAL RESOURCES CONSERVATION SERVICE

2011

MARYLAND DEPARTMENT OF ENVIRONMENT  
WATER MANAGEMENT ADMINISTRATION

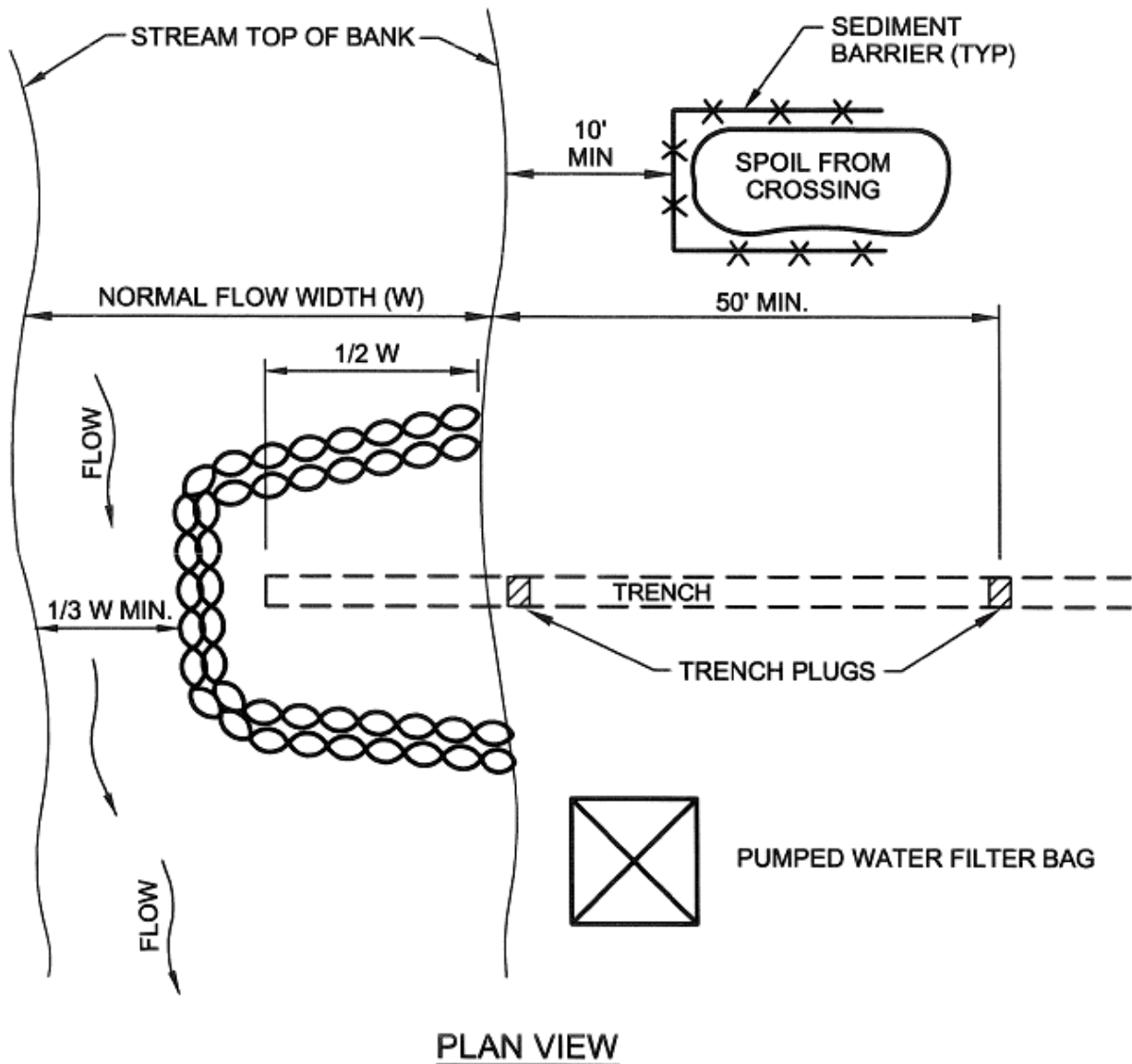
**ALTERNATIVE BEST MANAGEMENT PRACTICES (BMP)**  
**APPENDIX G**

---

# **Cofferdam Crossing**



**STANDARD CONSTRUCTION DETAIL #13-3  
Typical Utility Line Stream Crossing with Cofferdam**



PA DEP

Grubbing shall not take place within 50 feet of top-of-bank until all materials required to complete crossing are on site and pipe is ready for installation.

Trench plugs shall be installed within the trench on both sides of the stream channel (Standard Construction Detail #13-4).

Water accumulating within the work area shall be pumped to a pumped water filter bag or sediment trap prior to discharging into any receiving surface water.

Hazardous or pollutant material storage areas shall be located at least 100 feet back from the top of streambank.

All excess excavated material shall be immediately removed from the stream crossing area.

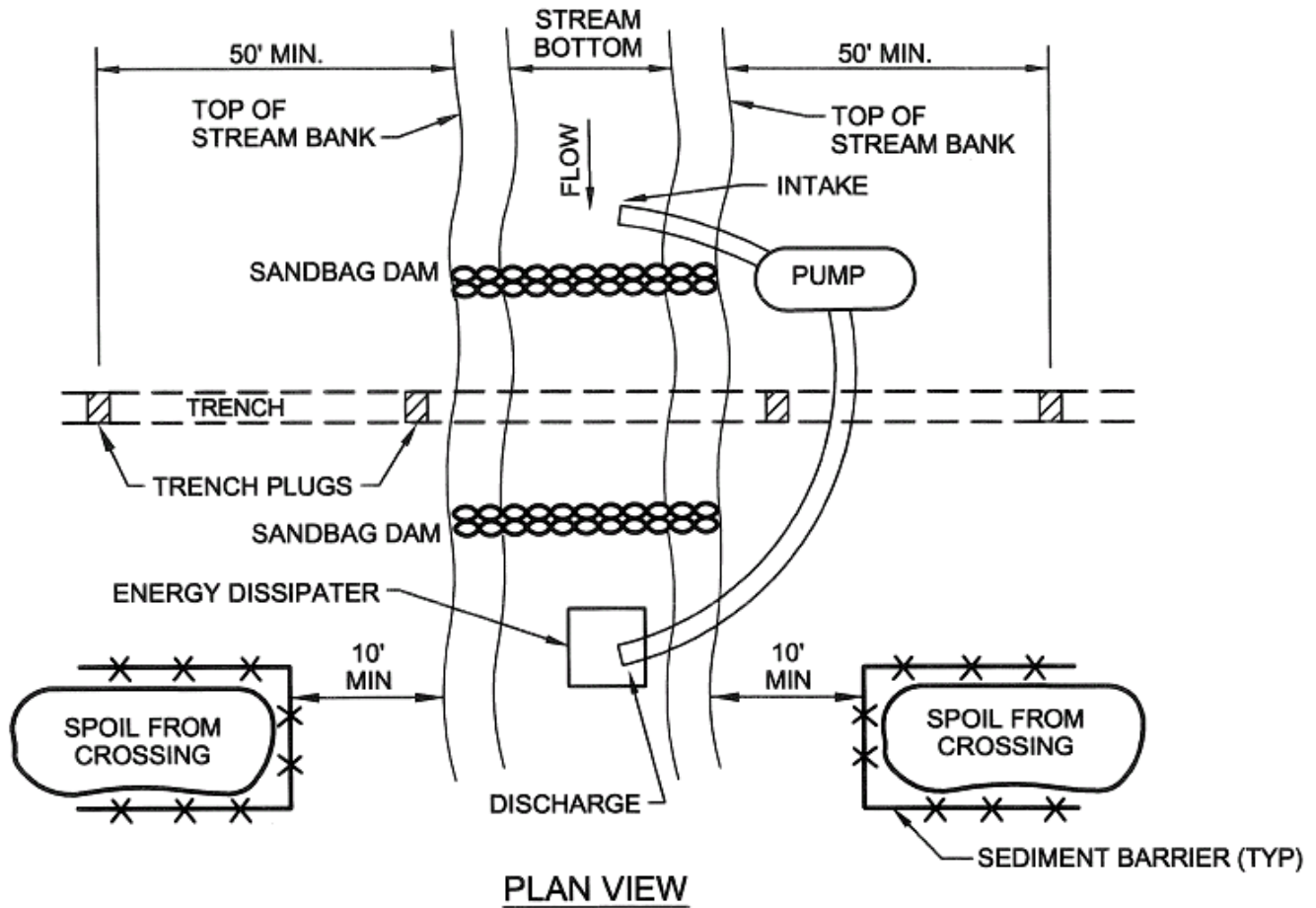
All disturbed areas within 50 feet of top-of-bank shall be blanketed or matted within 24 hours of initial disturbance for minor streams or 48 hours of initial disturbance for major streams unless otherwise authorized.

ALTERNATIVE BEST MANAGEMENT PRACTICES (BMP)  
APPENDIX H

---

## **Dam and Pump Crossing**

**STANDARD CONSTRUCTION DETAIL #13-2  
Typical Utility Line Stream Crossing with Pump Bypass**



PA DEP

Grubbing shall not take place within 50 feet of top-of-bank until all materials required to complete crossing are on site and pipe is ready for installation.

Bypass pump intake shall be maintained a sufficient distance from the bottom to prevent pumping of channel bottom materials.

Trench plugs shall be installed within the trench on both sides of the stream channel (Standard Construction Detail #13-4).

Water accumulating within the work area shall be pumped to a pumped water filter bag or sediment trap prior to discharging into any receiving surface water.

Hazardous or pollutant material storage areas shall be located at least 100 feet back from the top of streambank.

All excess excavated material shall be immediately removed from the stream crossing area.

All disturbed areas within 50 feet of top-of-bank shall be blanketed or matted within 24 hours of initial disturbance for minor streams or 48 hours of initial disturbance for major streams unless otherwise authorized.

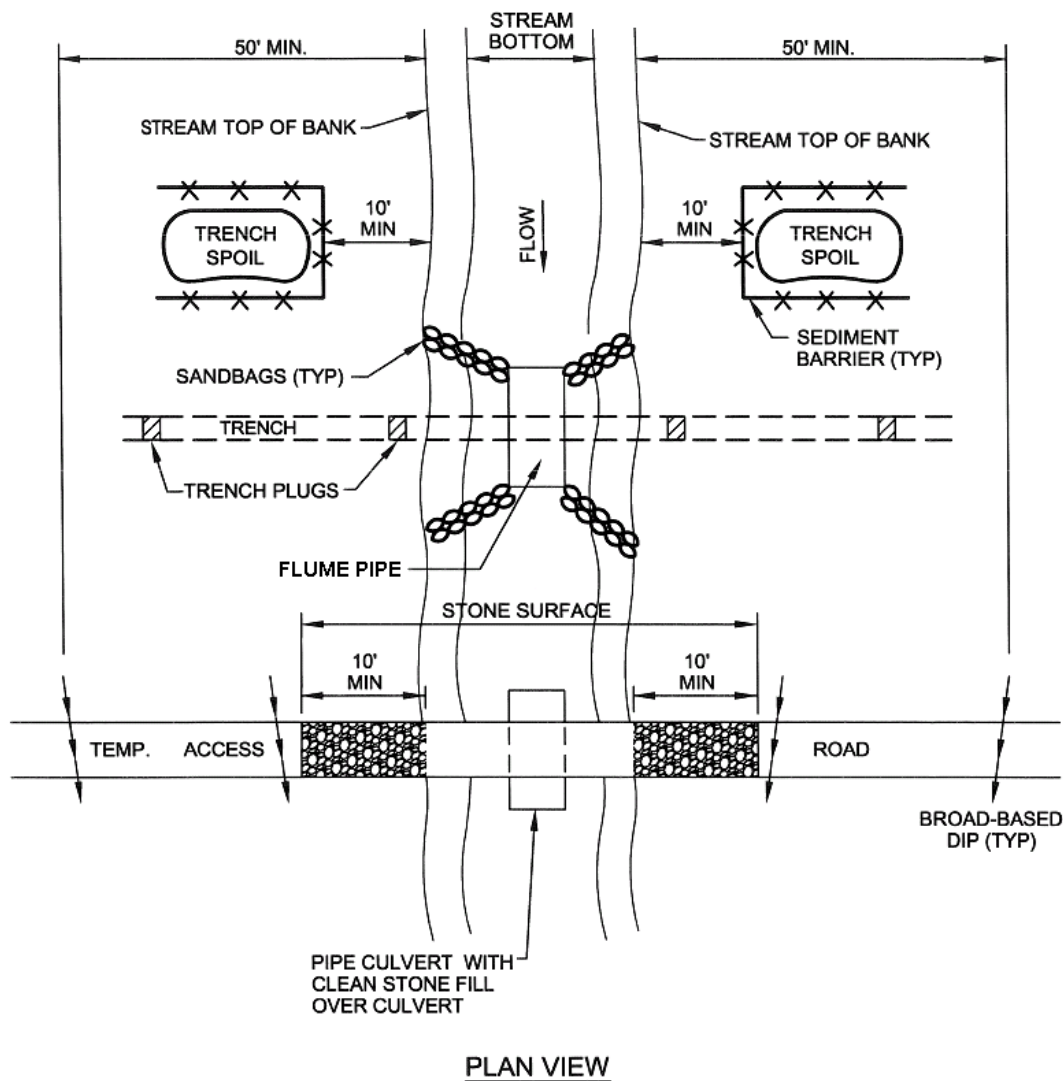
Appropriate streambank protection shall be provided within the channel.

**ALTERNATIVE BEST MANAGEMENT PRACTICES (BMP)**  
**APPENDIX I**

---

# **Flume Crossing**

# **STANDARD CONSTRUCTION DETAIL #13-1** **Typical Utility Line Flumed Stream Crossing with Optional Access Road**



PA DEP

Grubbing shall not take place within 50 feet of top-of-bank until all materials required to complete crossing are on site and pipe is ready for installation.

Pipe culvert for access road and flume pipe may be one continuous pipe.

Trench plugs shall be installed within the trench on both sides of the stream channel (Standard Construction Detail #13-4).

Water accumulating within the work area shall be pumped to a pumped water filter bag or sediment trap prior to discharging into any surface water.

Hazardous or pollutant material storage areas shall be located at least 100 feet back from the top of streambank.

All excess excavated material shall be immediately removed from the stream crossing area.

All disturbed areas within 50 feet of top-of-bank shall be blanketed or matted within 24 hours of initial disturbance for minor streams or 48 hours of initial disturbance for major streams unless otherwise authorized. Appropriate streambank protection shall be provided within the channel.

ALTERNATIVE BEST MANAGEMENT PRACTICES (BMP)  
APPENDIX J

---

## **Timber Mat Construction Entrance (Limited Use)**

## **Timber Mat Construction Entrance (Limited Use)**

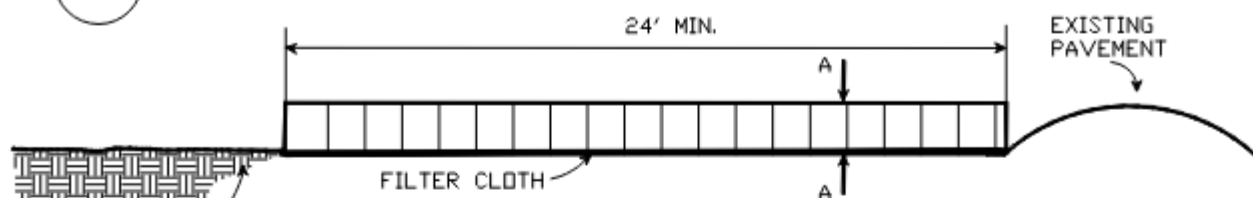
The use of Timber Mats as modified construction entrances are proposed at locations where construction traffic would exit the Transco right-of-way onto a public roadway. The modified construction entrances are proposed for the following reasons:

- **Type of Construction Vehicle.** The largest vehicles entering and exiting the right-of-way will be heavy-duty pick-up trucks, with no track-hoes, dump trucks, bulldozers or semi-truck size vehicles required.
- **Duration of Project.** The nature of the work for which timber mat construction entrances will be used will occur over a 2 to 3 day period before work proceeds to the next proposed entrance.
- **Additional land disturbance created during construction.** Entrances constructed as detailed in the Virginia Erosion and Sediment Control Handbook will create unnecessary additional land disturbances.

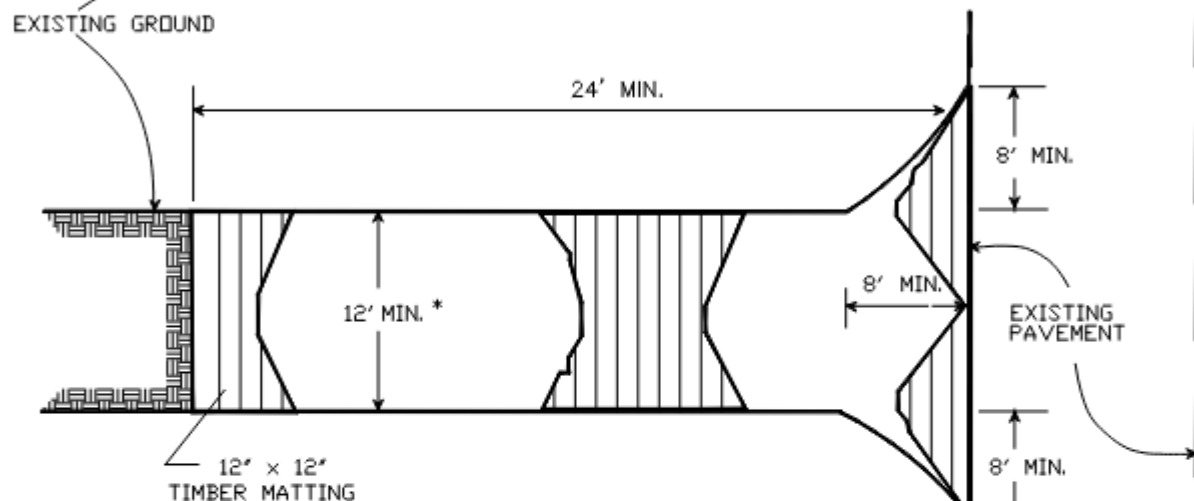
The proposed modified construction entrances will fulfill the requirement of Minimum Standard (MS) 17, while being well suited to the nature and schedule of the proposed construction for minor repair projects. Additionally sweeping will be performed daily and whenever material tracking occurs on public roadways.

# TIMBER MAT CONSTRUCTION ENTRANCE

CE

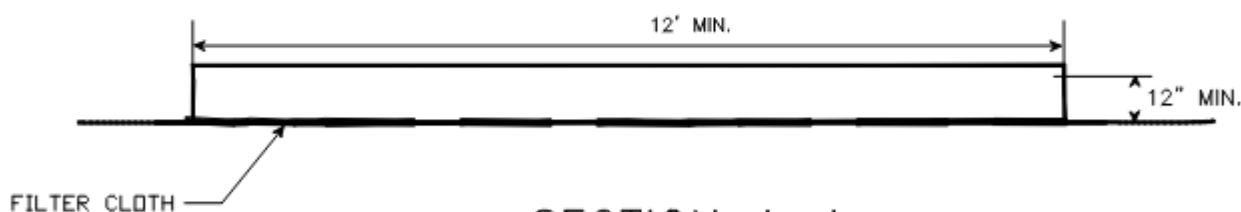


SIDE ELEVATION



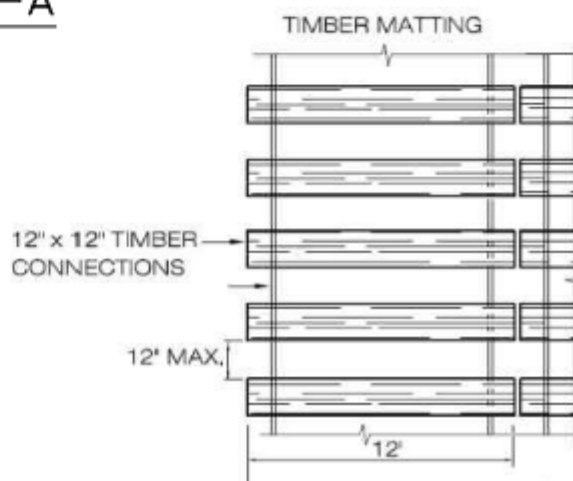
\* MUST EXTEND FULL WIDTH OF INGRESS AND EGRESS OPERATION

PLAN VIEW



SECTION A-A

1. Where sediment is transported onto a paved or public road surface, the road surface shall be cleaned thoroughly at the end of each day.
2. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area.
3. Street washing shall be allowed only after sediment is removed in this manner.





MANUFACTURER DATA SHEETS  
APPENDIX K

---

## CFS Manufacturer Data Sheet

# NETTING SPECIFICATIONS



Product Name	<b>PALLET Netting</b>	<b>REVO Netting</b>	<b>HV-X Netting</b>	<b>BLAZE Netting</b>
<b>Technical Name</b>	Heavy Duty Multi-Filament Polypropylene (HDMFPP)	Heavy Duty Multi-Filament Polyethylene (5-mil HDPE)	Heavy Duty Multi-Filament Polyester	Heavy Duty Multi-Filament Polyethylene w/ reinforcing monofilament
<b>Color</b>	Blue and Black	Blue and Black Integrated Orange Staking Dots	Hi-Vis Orange	Orange
<b>Applications</b>	Palletized Manufacturing RuggedField Installations	For On-Site Blowers	High Visibility Extreme Application	Extreme Application High Visibility and Portability
<b>Packaging</b>	Rolls	Rings	Rolls	Pre-sewn 12' and 18' containment units for Road Wattle product line
<b>Degradation Characteristics</b>	Photo-degradation	Photo-degradation	Negligible Degradation	Negligible Degradation
<b>Available Diameters</b>	8", 12", 18", 24"	12", 18", 24", 32"	8", 12", 18", 24"	9", 12"
<b>Opening Size</b>	1/8"	3/8"	1/8"	1/12"
<b>Strength (ASTM 5035)</b>	250 psi	52 psi	497 psi	378 psi
<b>UV Stability (ASTM D 4355)</b>	100% at 1000 hours	80% at 1000 hours	100% at 1000 hours	100% at 1000 hours
<b>Minimal Functional Longevity</b>	2 years	1 year	3 years	3 years
<b>Visual Profile</b>				

# PLAN SHEET DETAILS



## Pre-filled Compost Filter Sock

### GENERAL

- DiamondSock® Compost Filter Sock (CFS) is delivered to the jobsite "pre-filled" and coiled onto 40x48 wood pallets. It can be installed with a skid steer, backhoe, or other machinery. The contractor should determine which method is best, based on site conditions.
- Proper diameter sizing for CFS should be done by a Certified Professional Engineer according to the Maximum Slope Length Chart and/or applicable Local or State E&S Manual. DiamondSock® CFS diameters are 8-inch, 12-inch, 18-inch and 24 inch. Commonly used pyramids include: three 12s, two 18s with one 12, and three 18s (equates to single 32-inch diameter). When pyramiding with different diameters, always place the smaller CFS on top.
- CFS **Effective Heights** in the field are as follows: 8-inch (effective height 6.5 inches), 12-inch (9.5 inches), 18-inch (14.5 inches), 24-inch (19.5 inches), and 32-inch (25 inches). When determining settled Sediment Storage Capacity, the effective height should be used – not the CFS diameter.
- Under normal conditions, stake CFS at 10-ft intervals and at CFS Joints (continuous palletized CFS includes stakes in kit - under coiled CFS). For 8-inch and 12-inch diameter, use a 24-inch stake  $\geq 1\frac{1}{2}$  by  $1\frac{1}{4}$ -inch. For 18-inch and 24-inch, use a 42-inch stake  $\geq 1\frac{1}{2}$  by  $1\frac{1}{4}$ -inch. For 32-in CFS use a 48-inch stake  $\geq 1\frac{1}{2}$  by  $1\frac{1}{4}$ -inch. When staking pyramids, for three 12s, use 42-inch stake; for two 18s plus one 12, and three 18s, use 48-inch stake.

### INSTALLATION

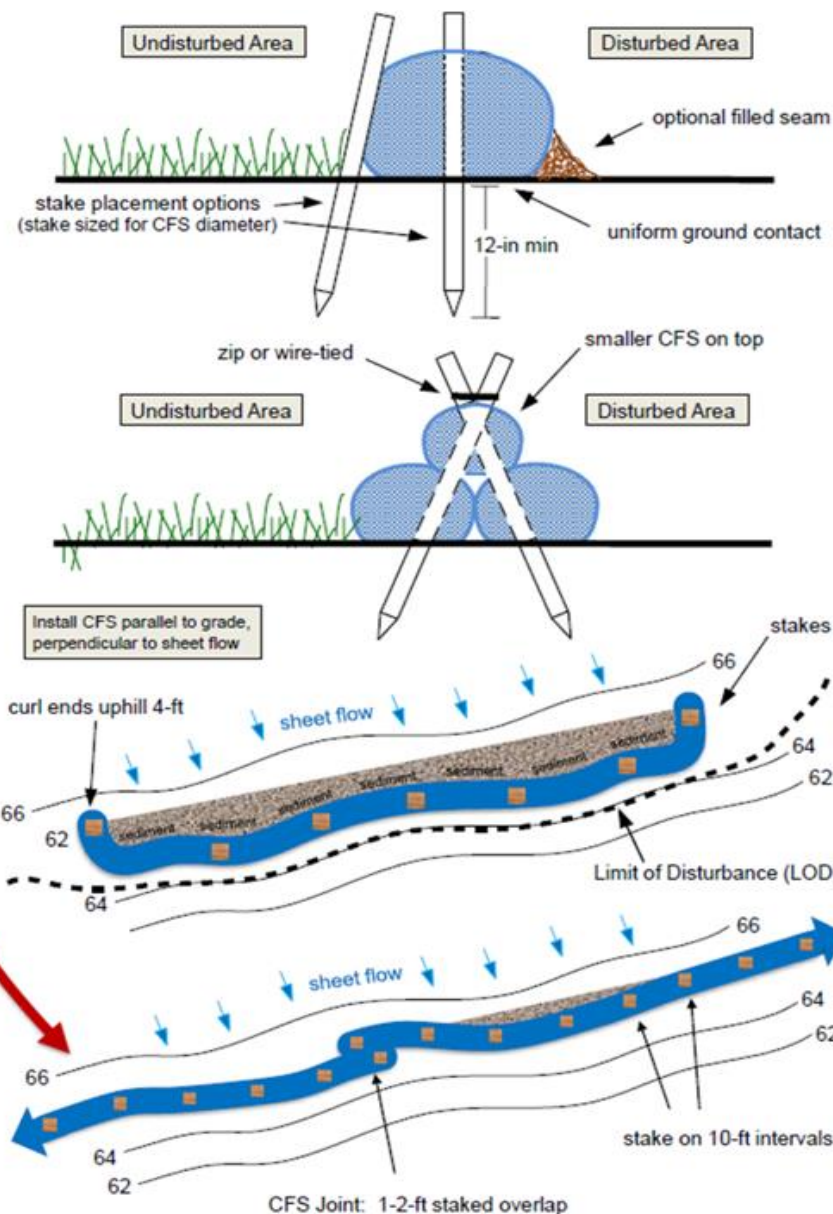
- CFS should be laid on a flat level area, in sections running perpendicular to the runoff flow direction from the Area of Disturbance. Loose material (soil, mulch, sand, or fill) may optionally be placed along the up-slope side, filling the seam between the soil surface and the sock, improving sediment retention.
- Hardwood stakes shall be installed through the middle of continuous CFS on 10-ft intervals. CFS may also be staked on the down slope side with stakes tilted downward wedging the CFS in place. Staking depth for sand clay, and silt loam soils shall be 12-inches. In the event staking is not possible (when CFS is used on concrete or paved hard surface) heavy concrete blocks shall be used behind CFS to help stabilize during rainfall/runoff events. Where two sections meet, j-hook higher elevation end, or side overlap ends 1-2-ft and tightly side-butt. Stake through each end and add loose material as needed.
- Palletized pre-cut CFS can be used in areas where machine access is difficult, CFS needs to be occasionally moved, or CFS needs to run diagonal to grade. CFS sectional installation allows periodic "j-hooks" at section ends. This prevents parallel unchecked water flow that can undermine the CFS.
- CFS Joint: Where two CFS sections meet on level grade, overlap the adjoining ends, tightly butt together, and stake through each end (see detail). Where Two sections meet on un-level grade, j-hook higher elevation end, stake, and begin new section just below. Use loose mulch to fill any voids in joint.

### MAINTENANCE

- CFS should be inspected after each runoff event. Sediment to be removed once it has accumulated to one-half the original height of the CFS. Repair with handwork if a given section of CFS shows signs of undercutting. Reinforce with handwork if a given section of CFS shows signs of pushing.
- A given section of CFS shall be replaced whenever it has deteriorated to such an extent that the effectiveness is reduced or diminished. Deterioration could occur because of natural mesh fabric breakdown over time or abusive field activities such as dragging/moving on the jobsite or driving over CFS.
- Some ripping and tearing of the CFS fabric is acceptable as long as the overall structural integrity of the CFS is not compromised. The fabric must continue to hold the Filler Material securely in place in an oval form.
- A given section of CFS shall be replaced whenever sediment has built up and been removed three times. This section of CFS is likely full of fine powdery sediment - this is normal. CFS is movable once placed to accommodate field adjustments.

### REMOVAL

- CFS shall remain in place until disturbed areas have been stabilized. All sediment accumulation at CFS shall be removed and properly disposed of before de-installing CFS. When de-installing, cut CFS open and spread the Filler Material around the site. The netting shall be removed from jobsite.



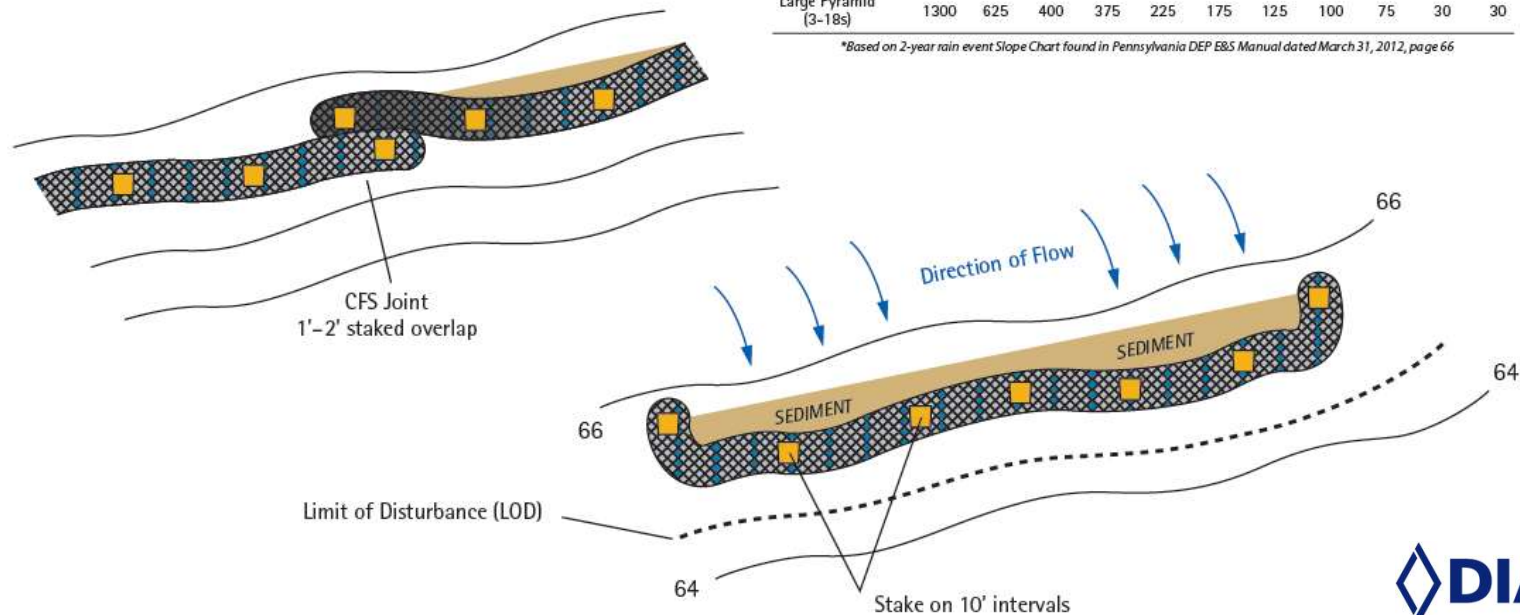
## Perimeter Control

V1.0

Place DIAMOND SOCK Compost Filter Sock (CFS) on a flat, level grade running perpendicular to the sheet flow direction from the Area of Disturbance. Where two CFS sections meet, tightly overlap the adjoining ends, and stake through each end section. CFS size should be determined by E&S Planner according to local or state slope chart.

CFS Diameter	Recommended Maximum Slope Length Above Compost Filter Sock <i>(in feet)</i>										
	2%	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%
8 in	400	200	100	25	20	15	10	5	5	5	5
12 in	500	225	175	100	35	25	20	15	15	10	10
18 in	700	375	225	175	100	75	50	25	25	15	15
Small Pyramid (3-12s)	700	375	225	175	100	75	50	25	25	15	15
24 in	1000	500	300	225	200	175	100	75	50	25	25
Medium Pyramid (2-18s, 1-12)	1000	500	300	225	200	175	100	75	50	25	25
32 in	1300	625	400	375	225	175	125	100	75	30	30
Large Pyramid (3-18s)	1300	625	400	375	225	175	125	100	75	30	30

\*Based on 2-year rain event Slope Chart found in Pennsylvania DEP E&S Manual dated March 31, 2012, page 66



**DIAMOND SOCK®**  
Pre-filled Compost Filter Sock



**TRI/ENVIRONMENTAL, INC.**  
A Texas Research International Company

### Sediment Control Test Results via ASTM D 5141

Client: MKB Company TRI Log #: 523 Date: 8/26/16 Temperature, C: 24 Technicians: JWS/AMH

Sample ID	Composition	Specimen #	Soil Type	Test Configuration (Vertical or Horizontal)	Specimen Width, cm	Flow Volume (L)	Distance from SRD to the edge of water behind SRD at end of 25 min (mm)	Flow Rate (m³/m²/min)	Flow Rate (GPM/ft²)	Initial Mass of Soil (g)	Final Mass of Soil (g)	Filtering Efficiency (%)
Diamond Sock	Compost Filter Sock w/ Woven Geotextile	1	Clear Water	Vertical	81	50	0	0.341	8.375	0	0.00	n/a
			Silty Clay	Vertical	81	50	0	0.248	6.080	150	3.07	98.0
			Silty Clay	Vertical	81	50	0	0.203	4.989	150	4.80	96.8
			Silty Clay	Vertical	81	50	0	0.192	4.717	150	6.74	95.5
		Avg							0.214	5.262	150	4.87



Typical Upstream View - With Sediment-Laden Discharge



Typical Downstream View - With Sediment-Laden Discharge



Testing Apparatus

Calculations & Report by: C. Joel Sprague, P.E.  
Date: 1-Sep-16





# PRECISION TESTING LABORATORIES, INC.

313 Hill Avenue, Nashville TN 37210  
Phone 615-254-3401 Fax 615-254-3488  
www.precisiontesting.com

Laboratory Report No. 22173 A  
8-Jul-14

Page 1 of 2

Mr. David Dickson  
Dickson Industries, Inc.  
2425 Dean Ave,  
Des Moines, IA 50317

Cc: n/a

PO #: n/a

Item: Two (2) samples of material

Identification: 1.) # 8  
2.) # 12

Purpose: Breaking Force of Textile Fabrics (Strip Method), ASTM D ASTM D5035-11


Test	Unit of Measure	Specimen Results					Average
<b>Breaking Force and Elongation of Textile Fabrics</b>							
<b>ASTM D5035-11</b>							
<b>1C-E</b>							
<b>1.) # 8</b>							
	<u>Length</u>						
Breaking Strength, psi		260.07	252.81	554.39	394.35	460.37	384.40
Elongation, %		99.33	82.70	114.33	97.67	106.53	100.11
	<u>Width</u>						
Breaking Strength, psi		1,357.79	1,109.16	1,431.40	1,284.93	1,277.17	1,309.71
		1,382.57	1,288.68	1,346.02			
Elongation, %		170.27	152.83	175.47	116.57	130.17	147.19
		169.67	122.87	139.70			
<b>2.) # 12</b>							
	<u>Length</u>						
Breaking Strength, psi		648.47	452.43	484.73	510.02	508.51	520.83
Elongation, %		136.97	94.20	98.73	111.40	105.80	109.42
	<u>Width</u>						
Breaking Strength, psi		1,170.51	1,341.01	1,287.43	1,257.64	1,264.90	1,267.71
		1,349.52	1,157.99	1,312.72			
Elongation, %		127.00	176.63	148.93	182.50	149.03	160.28
		180.93	124.73	192.43			

**Report Revision Notification**

Laboratory Report 22173 dated 27-Jun-14 has been revised to Laboratory Report 22173 A for the following reason(s). Client requested breaking strength to be reported in psi.

This report is limited to and related only to the particular instrument, material or other subject to which it refers. These test results can not be compared to results obtained using different methods or under different conditions. No representation is made that similar articles will be of like quality. Neither Precision Testing Laboratories, Inc (hereinafter "Precision Testing") nor their officers, directors, managers or employees, shall be responsible for any loss or damage resulting directly or indirectly from any failure, error or omission in testing, or in the reporting of test results. Precision Testing has no controls, and assumes no responsibility for the tested product's functionality or use. Precision Testing's liability shall not exceed the fees paid for the testing reflected on this report. Precision Testing observes and maintains client confidentiality, and limits reproduction of this report, except in full, without prior approval of Precision Testing. tl

Signed:   
Don G. Roney, Laboratory Manager

Signed:   
Suzanne Piispanen, COO

MANUFACTURER DATA SHEETS  
APPENDIX L

---

## **Diversion Filter Sock (DFS) Manufacturer Data Sheet**



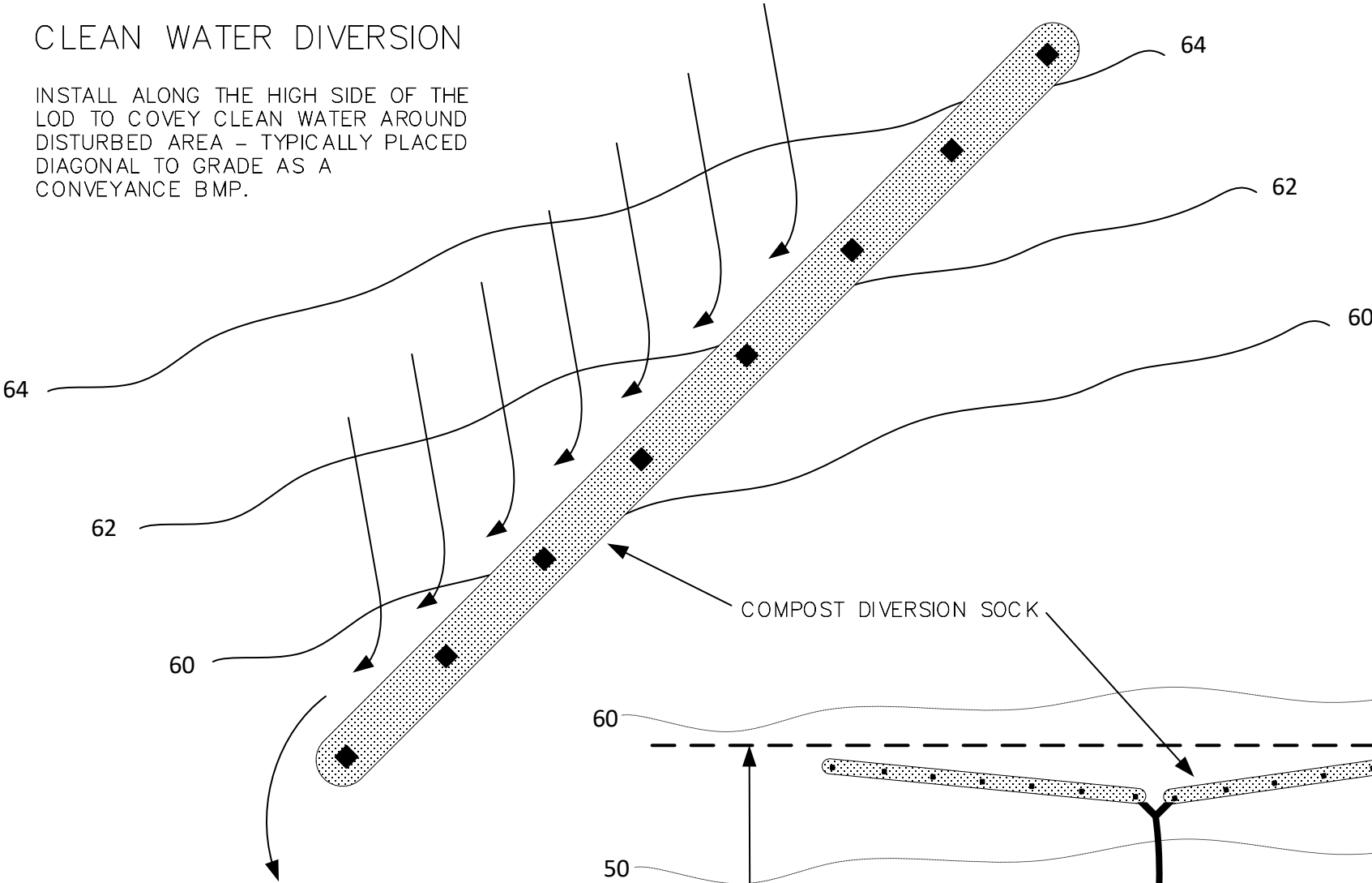
# Pre-Filled Diamond Sock™ Pallets - Specifications

Details	8-inch			12-inch			18-inch		24-inch
Length (ft per pallet)	180-ft (1 piece)	180-ft (18 10-ft)	180-ft (9 20-ft)	110-ft (1 piece)	100-ft (10 10-ft)	100-ft (5 20-ft)	55-ft (1 piece)	50-ft (5 10-ft)	30-ft (1 piece)
Part Number	DP8-180-1	DP-18-10	DP-9-20	DP12-110-1	DP12-10-10	DP12-5-20	DP18-55-1	DP18-5-20	DP24-30-1
Stakes (per pallet)	18 stakes	none	none	12 stakes	none	none	6 stakes	none	4 stakes
Stake Size	1⅞x1⅞x28	none	none	1⅞x1⅞x28	none	none	1⅞x1⅞x42	none	1⅞x1⅞x42
Shipping Weight (±10%)	1750 lbs.			1750 lbs.	1700 lbs.		1850 lbs.	1700 lbs.	1850 lbs.
Linear Weight (per ft)	8 lbs.			16 lbs.			35 lbs.		60 lbs.
Pallets per Tractor Load	26 Pallets – (strapped on 48-ft x 102-in flatbed –or- 53-ft Dry Van Trailer, pallets shuttled to back by driver using a pallet jack)								
Fabric Color and Name	Black - Diamond Sock™ Pallet Netting (Meets PA DEP 2012 E&S Manual Specification for 1/8" Mesh Opening Material)								
Degradation Type	Photo Degradation (upon stabilization, Diamond Sock™ should be slit open, mulch spread, and fabric removed from jobsite)								
Tensile Strength	222 psi (ASTM 5035 – Fabric exceeds PA DEP 2012 E&S Manual Specification for 1/8" Mesh Opening Material)								
HQ Filler Material (Default)	Well-aged shredded and ground hardwoods (reference PA DEP 2012 E&S Manual for High Quality Watershed Applications)								
EV Filler Material (Optional)	Certified Shredded Hardwood Compost (reference PA DEP 2012 E&S Manual for Exception Value Watershed Applications)								
Field Functional Longevity	2 years								
Packaging	UV-Restraint Stretch Wrap with Top Sheet								
Storage Life	Dry, under roof – 6 months / Outdoors – 3 months								



CLEAN WATER DIVERSION

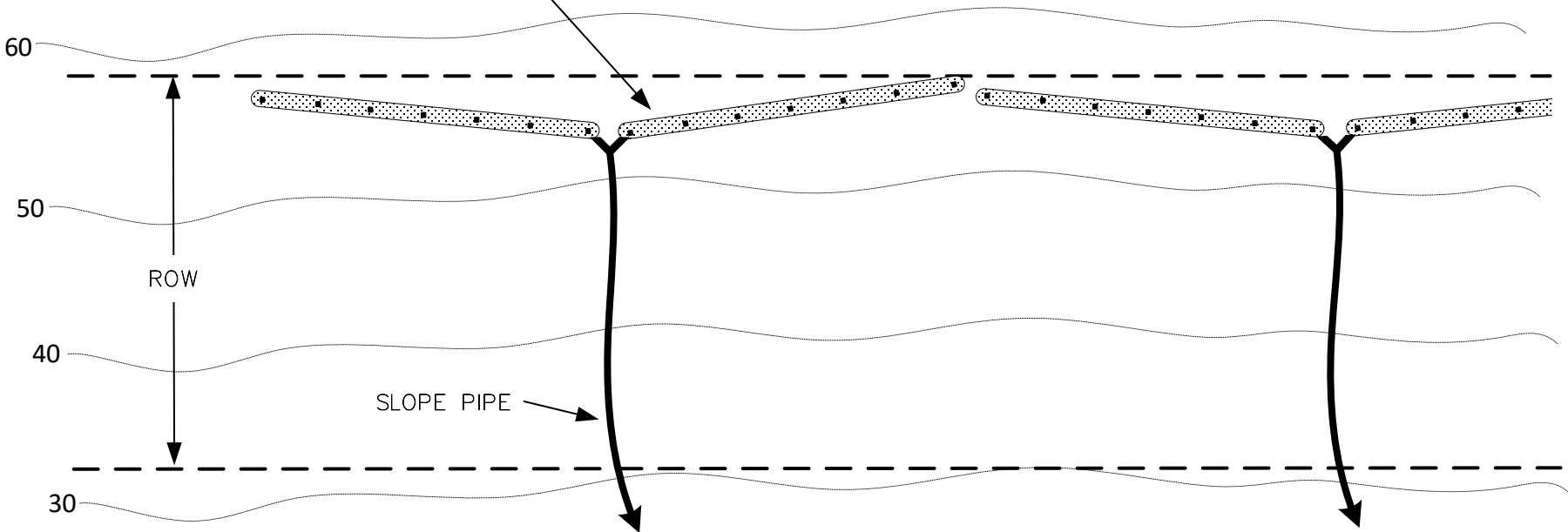
INSTALL ALONG THE HIGH SIDE OF THE LOD TO COVEY CLEAN WATER AROUND DISTURBED AREA – TYPICALLY PLACED DIAGONAL TO GRADE AS A CONVEYANCE BMP.



PRE-FILLED COMPOST DIVERSION SOCK

SPECIFICATIONS:

- 1. MINIMUM PRE-FILLED SOCK DIAMETER IS 12”.
- 2. FILL IS 50-50 BLEND OF STANDARD CFS FILL AND WELL AGED LEAF COMPOST.
- 3. STAKE NO MORE THAN EVERY 5’.
- 4. 5% FALL IS RECOMMENDED.
- 5. NETTING IS DIAMOND SOCK PRE-FILLED PALLET NETTING.
- 6. 25% HEAVIER THAN PRE-FILLED CFS.
- 7. LITTLE TO NO HYDRAULIC FLOW – FUNCTION IS TO CONVEY WATER ALONG SOCK.
- 8. EDGING MULCH IS NOT NEEDED.
- 9. SOCK CAN BE VEGETATED IF DESIRED.



MANUFACTURER DATA SHEETS  
APPENDIX M

---

# Slope Stabilization Manufacturer Data Sheet



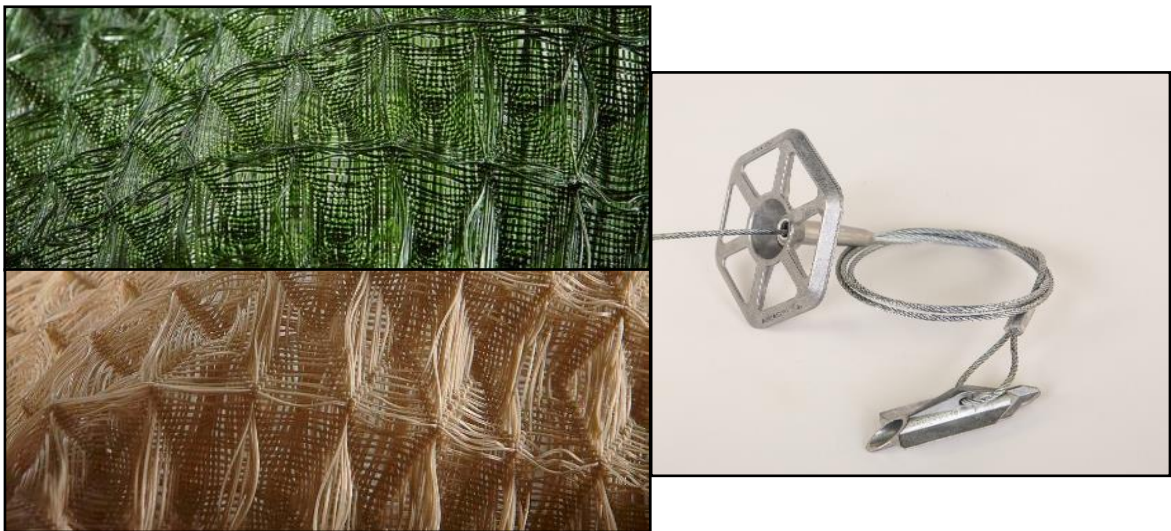
# ARMORMAX®

Engineered Earth Armoring System

## Product Data

ARMORMAX® 75  
For Surficial Slope Stability

The ARMORMAX® 75 for Erosion Control is an Engineered Earth Armoring Solution™ used for surficial slope stability in vegetated and unvegetated applications. It is composed of two components: PYRAMAT® 75 High Performance Turf Reinforcement Mat (HPTRM) and Type B2 Engineered Earth Anchors. ARMORMAX® 75 is available in green or tan to provide for an aesthetically pleasing solution with proven performance. The anchor component is specifically designed and tested for compatibility and performance with PYRAMAT® 75 HPTRM to provide a system solution. Propex offers several anchor options to provide the ARMORMAX® 75 system designed for specific challenges and needs. The expected design life of ARMORMAX® 75 is up to 75 years because of its superior UV resistance, resistance to corrosion, strength, and durability in the most demanding environments.



The PYRAMAT® 75 HPTRM component of ARMORMAX® 75 values listed below<sup>1</sup> while manufactured at a Propex facility having achieved ISO 9001:2008 certification. Propex also performs internal Manufacturing Quality Control (MQC) tests that have been accredited by the Geosynthetic Accreditation Institute – Laboratory Accreditation Program (GAI-LAP).

The Type B2 Anchor model is used for superficial slope stability applications and has a working load of up to 1500 lbs. The Type B2 Anchor consists of an aluminum anchor head, galvanized steel cable, aluminum ferrules, aluminum load-locking mechanism, and an aluminum top plate. The bullet nose design of the anchor head allows the anchor to penetrate PYRAMAT® 75 HPTRM resulting in minimal installation damage. The Type B2 Anchor is also designed with a recessed cavity so the top of the cable can be cut below the surface being protected.



**Propex**  
GEOSOLUTIONS

ENGINEERED EARTH ARMORING SOLUTIONS™

[www.propexglobal.com](http://www.propexglobal.com)

Propex Operating Company, LLC · 4019 Industry Drive · Chattanooga, TN 37416 · ph 800 621 1273 · ph 423 855 1466

ARMORMAX®, PYRAMAT®, LANDLOK®, X3®, PYRAWALL®, SCOURLOK®, GEOTEX®, PETROMAT®, PETROTAC®, REFLECTEX®, and GRIDPRO™ are registered trademarks of Propex Operating Company, LLC.

This publication should not be construed as engineering advice. While information contained in this publication is accurate to the best of our knowledge, Propex does not warrant its accuracy or completeness. The ultimate customer and user of the products should assume sole responsibility for the final determination of the suitability of the information and the products for the contemplated and actual use. The only warranty made by Propex for its products is set forth in our product data sheets for the product, or such other written warranty as may be agreed by Propex and individual customers. Propex specifically disclaims all other warranties, express or implied, including without limitation, warranties of merchantability or fitness for a particular purpose, or arising from provision of samples, a course of dealing or usage of trade.

© 2019 Propex Operating Company, LLC



# ARMORMAX®

Engineered Earth Armoring System

## Product Data

ARMORMAX® 75

For Surficial Slope Stability

### PYRAMAT® 75 HPTRM PROPERTIES

PROPERTY	TEST METHOD	ENGLISH	METRIC
ORIGIN OF MATERIALS			
% U.S. Manufactured		100%	100%
PHYSICAL			
Thickness <sup>2</sup>	ASTM D-6525	0.40 in	10.2 mm
Light Penetration (% Passing) <sup>3</sup>	ASTM D-6567	10%	10%
Color	Visual	Green or Tan	
MECHANICAL			
Tensile Strength <sup>2</sup>	ASTM D-6818	4000 x 3000 lbs/ft	58.4 x 43.8 kN/m
Elongation <sup>2</sup>	ASTM D-6818	40 x 35 %	40 x 35 %
Resiliency <sup>2</sup>	ASTM D-6524	80%	80%
Flexibility <sup>4</sup>	ASTM D-6575	0.534 in-lb	616,154 mg-cm
ENDURANCE			
UV Resistance % Retained at 3,000 hrs <sup>4</sup>	ASTM D-4355	90%	90%
UV Resistance % Retained at 6,000 hrs <sup>4</sup>	ASTM D-4355	90%	90%
PERFORMANCE			
Velocity (Vegetated) <sup>4, 5</sup>	Large Scale	25 ft/sec	7.6 m/sec
Shear Stress (Vegetated) <sup>4, 5</sup>	Large Scale	16 lb/ft²	766 Pa
Manning's n (Unvegetated) <sup>4, 6</sup>	Calculated	0.028	0.028
USACE / CSU Wave Overtopping	Large Scale	USACE Approved	
Seedling Emergence <sup>4</sup>	ASTM D-7322	296%	296%
ROLL SIZES		8.5 ft x 120 ft	2.6 m x 36.6 m
		15.0 ft x 120 ft	4.6 m x 36.6 m

### TYPE B2 ANCHOR PROPERTIES

Component Materials	Material Composition	Physical Properties	
Anchor Head	Aluminum	5.01 in x 1.75 in x 1.64 in (127.3 mm x 44.5 mm x 41.7 mm) Bearing Area: 6.92 in² (44.6 mm²)	
Cable Tendon	Galvanized Steel	Diameter: 0.1875 in (4.8 mm)	
Lower Termination	Aluminum	Length: 0.65 in (16.5 mm), Wall Thickness: 0.11 in (2.8 mm)	
Load Bearing Plate	Aluminum	5.98 in x 6.6 in x 0.75 in (151.9 mm x 167.6 mm x 19.1 mm) Bearing Area: 17.43 in² (112.5 mm²)	
Top Termination	Aluminum	Circumferential Tripple Wedge Grip Assembly to Eliminate Cable Pinch Points Grip to Cable Contact Surface Area: 0.505 in² (325.8 mm²) Grip to Cable Contact Ratio: 97% of Cable Diameter	
Performance Properties			
Ultimate Assembly Strength	2600 lb (11.57 kN)	Typical Working Load	1500 lb (6.67 kN)
Ultimate Cable Strength	3700 lb (16.46 kN)	Embedment Depth	6-12 ft (1.83-3.66 m)

#### NOTES:

- The property values listed above are effective 01/01/2019 and are subject to change without notice. Values represent testing at time of manufacture.
- Minimum average roll values (MARV) are calculated as the typical minus two standard deviations. Statistically, it yields a 97.7% degree of confidence that any samples taken from quality assurance testing will exceed the value reported.
- Maximum Average Roll Value (MaxARV), calculated as the typical plus two standard deviations. Statistically, it yields a 97.7% degree of confidence that any sample taken during quality assurance testing will meet to the value reported.
- Typical Value.
- Maximum permissible velocity and shear stress has been obtained through vegetated testing programs featuring specific soil types, vegetation classes, flow conditions, and failure criteria. These conditions may not be relevant to every project nor are they replicated by other manufacturers. Please contact Propex for further information.
- Calculated as typical values from large-scale flexible channel lining test programs with a flow depth of 6 to 12 inches.



ENGINEERED EARTH ARMORING SOLUTIONS™

[www.propexglobal.com](http://www.propexglobal.com)

Propex Operating Company, LLC · 4019 Industry Drive · Chattanooga, TN 37416 · ph 800 621 1273 · ph 423 855 1466

ARMORMAX®, PYRAMAT®, LANDLOK®, X3®, PYRAWALL®, SCOURLOK®, GEOTEX®, PETROMAT®, PETROTAC®, REFLECTEX®, and GRIDPRO™ are registered trademarks of Propex Operating Company, LLC.

This publication should not be construed as engineering advice. While information contained in this publication is accurate to the best of our knowledge, Propex does not warrant its accuracy or completeness. The ultimate customer and user of the products should assume sole responsibility for the final determination of the suitability of the information and the products for the contemplated and actual use. The only warranty made by Propex for its products is set forth in our product data sheets for the product, or such other written warranty as may be agreed by Propex and individual customers. Propex specifically disclaims all other warranties, express or implied, including without limitation, warranties of merchantability or fitness for a particular purpose, or arising from provision of samples, a course of dealing or usage of trade.

AS&S TABLES AND CHECKLISTS  
APPENDIX N

---

**VDEQ Application Package Check Sheet for VPDES  
Projects with VDEQ-Approved AS&S**



**DEQ Application Package Check Sheet for  
General VPDES Permit for Discharges of Stormwater from Construction Activities**

**Projects with DEQ approved Annual Standards and Specifications**

**Instructions:** In order to obtain coverage under the General VPDES Permit for Discharges of Stormwater from Construction Activities (i.e., the Construction General Permit), the items listed below should be submitted to the Department of Environmental Quality (DEQ) Central Office at the following address:

**Via Postal Mail:**

Department of Environmental Quality  
Office of Stormwater Management  
P.O. Box 1105  
Richmond, VA 23218

**Via UPS, Fed Ex, or other courier service:**

Packages sent on or before December 26, 2017  
Department of Environmental Quality  
Office of Stormwater Management, 10<sup>th</sup> Floor  
629 E. Main Street  
Richmond, VA 23219

Packages sent after December 26, 2017:  
Department of Environmental Quality  
Office of Stormwater Management, 17<sup>th</sup> Floor  
1111 E. Main Street, Suite 1400  
Richmond, VA 23219

- Cover letter indicating that the Stormwater Management (SWM) Plan has been prepared, reviewed and approved in accordance with the DEQ-approved Annual Standards and Specifications (1 copy)
- Cover letter indicating that the Erosion and Sediment Control (ESC) Plan has been prepared, reviewed and approved in accordance with the DEQ-approved Annual Standards and Specifications (1 copy)
- Completed Construction General Permit Registration Statement (original signed & dated)
- Annual Standards Entity Information Form (if applicable)

**Note:** The Construction General Permit fee applicable Permit Fee should **not** be submitted to DEQ at the time of SWM Plan / ESC Plan submittal. DEQ will contact the construction activity operator after SWM Plan / ESC Plan approval to obtain the applicable permit fee. Please include a valid email address on your registration statement so that we may send you an invoice and payment instructions.

**AS&S TABLES AND CHECKLISTS  
APPENDIX O**

---

**ESC Plan Checklist**



## **PLAN SUBMITTER'S CHECKLIST**

### **FOR EROSION AND SEDIMENT CONTROL PLANS**

Please fill in all blanks and reference the plan sheets/pages where the information may be found, where appropriate, or write N/A by items that are not applicable.

#### **GENERAL**

Plan Submission Date \_\_\_\_\_  
Project Name \_\_\_\_\_  
VSMP Permit Number \_\_\_\_\_  
Site Plan Number \_\_\_\_\_  
Site Address \_\_\_\_\_  
Applicant \_\_\_\_\_ Phone Number \_\_\_\_\_  
Applicant Legal Address \_\_\_\_\_  
Owner \_\_\_\_\_ Phone Number \_\_\_\_\_  
Principal Designer \_\_\_\_\_ Phone Number \_\_\_\_\_  
General Contractor \_\_\_\_\_ Phone Number \_\_\_\_\_

\_\_\_\_\_ Complete set of plans- Include all sheets pertaining to the site grading and stormwater and any activities impacting erosion and sediment control and drainage:

- ☐ Existing conditions
- ☐ Demolition
- ☐ Site grading
- ☐ Erosion and sediment control
- ☐ Storm sewer systems
- ☐ Stormwater management facilities
- ☐ Utility layout
- ☐ Landscaping
- ☐ On-site and off-site borrow and disposal areas that do not have separate approved ESC Plans

\_\_\_\_\_ Professional's seal - The designer's original seal, signature, and date are required on the *cover* sheet of each Narrative and each set of Plan Sheets. A facsimile is acceptable for subsequent Plan Sheets.

\_\_\_\_\_ Number of plan sets - Two sets of ESC Plans should be submitted. The DEQ office will retain all submitted plans.

\_\_\_\_\_ Variances - Variances requested at the time of plan submission are governed by Section 9VAC25-840-50 of the *Virginia Erosion and Sediment Control Regulations*.

\_\_\_\_\_ Certified Responsible Land Disturber (RLD) - A certified RLD is required during all stages of construction, from the initial land disturbance through final site stabilization. **The name of the project RLD must be provided before any land disturbance may begin.** Notify DEQ in a

**PROJECT NAME:** \_\_\_\_\_ **SUBMITTAL#:** \_\_\_\_\_

**PLANS DATED:** \_\_\_\_\_

timely manner if the RLD changes during the course of the project.

\_\_\_\_\_ Local Consideration – Plans have been provided to the applicable jurisdictions.

- ☐ Dulles Airport (MWAA)
- ☐ Fairfax County
- ☐ Loudoun County
- ☐ Town of Herndon
- ☐ Dulles Greenway (Trip II)
- ☐ VDOT

**CHECKLIST PREPARER**

I certify that I am a professional in adherence to all minimum standards and requirements pertaining to the practice of that profession in accordance with Chapter 4 (§ 54.1-400 et seq.) of Title 54.1 of the Code of Virginia and attendant regulations. By signing this checklist I am certifying that this document and all attachments are, to the best of my knowledge and belief, true, accurate, and complete.

SIGNATURE \_\_\_\_\_

PRINTED NAME \_\_\_\_\_

QUALIFICATIONS \_\_\_\_\_

DATE \_\_\_\_\_

**PROJECT NAME:** \_\_\_\_\_ **SUBMITTAL#:** \_\_\_\_\_

**PLANS DATED:** \_\_\_\_\_

## NARRATIVE

Please reference plan sheet numbers where the information may be found.

- \_\_\_\_\_ Project description - Briefly describe the nature and purpose of the land-disturbing activity. Provide the area (acres) to be disturbed.
- \_\_\_\_\_ Existing site conditions - A description of the existing topography (% slopes), ground cover, and drainage (on-site and receiving channels).
- \_\_\_\_\_ Adjacent areas - A description of all neighboring areas such as residential developments, agricultural areas, streams, lakes, roads, etc., that might be affected by the land disturbance.
- \_\_\_\_\_ Off-site areas - Describe any off-site land-disturbing activities that may occur (borrow sites, disposal areas, easements, etc.). Identify the Owner of the off-site area and the entity responsible for plan review. Include a statement that any off-site land-disturbing activity associated with the project must have an approved ESC Plan. Submit documentation of the approved ESC Plan for each of these sites.
- \_\_\_\_\_ Soils - Provide a description of the soils on the site, giving such information as soil name, mapping unit, erodibility, permeability, surface runoff, and a *brief* description of depth, texture and soil structure. Show the site location on the Soil Survey, if it is available. Include a plan showing the boundaries of each soil type on the development site.
- \_\_\_\_\_ Critical areas - A description of areas on the site that have potentially serious erosion problems or that are sensitive to sediment impacts (e.g., steep slopes, watercourses, wet weather / underground springs, etc.).
- \_\_\_\_\_ Erosion and sediment control measures - A description of the structural and vegetative methods that will be used to control erosion and sedimentation on the site. Controls should satisfy applicable minimum standards and specifications in Chapter 3 of the 1992 *Virginia Erosion and Sediment Control Handbook* (VESCH) or more stringent local requirements.
- \_\_\_\_\_ Management strategies / Sequence of construction - Address management strategies, the sequence of construction, and any phasing of installation of ESC measures.
- \_\_\_\_\_ Permanent stabilization - A brief description, including specifications, of how the site will be stabilized after construction is completed.
- \_\_\_\_\_ Maintenance of ESC measures - A schedule of regular inspections, maintenance, and repair of erosion and sediment control structures should be set forth.
- \_\_\_\_\_ Calculations for temporary erosion and sediment control measures - For each temporary ESC measure, provide the calculations required by the standards and specifications.
- \_\_\_\_\_ Stormwater management considerations - Will the development of the site cause an increase in peak runoff rates? Will the increase in runoff cause flooding or channel degradation downstream? Describe the strategy to control stormwater runoff, including during construction.

**PROJECT NAME:** \_\_\_\_\_ **SUBMITTAL#:** \_\_\_\_\_

**PLANS DATED:** \_\_\_\_\_

\_\_\_\_\_ Specifications / Detail Drawings for erosion and sediment control measures - For each erosion and sediment control measure employed in the plan, include, at a minimum, the detail from the standard and specification in the VESCH or more stringent local requirements. Include any approved variances or revisions to the standards and specifications.

\_\_\_\_\_ Specifications for stormwater and stormwater management structures - Provide specifications for stormwater and stormwater management structures, i.e., pipe materials, pipe bedding, stormwater structures.

**PROJECT NAME:** \_\_\_\_\_ **SUBMITTAL#:** \_\_\_\_\_

**PLANS DATED:** \_\_\_\_\_

## SITE PLAN

Please reference plan sheet numbers where the information may be found.

- \_\_\_\_\_ Vicinity map - A small map locating the site in relation to the surrounding area. Include any landmarks that might assist in locating the site.
- \_\_\_\_\_ Indicate north - The direction of north in relation to the site.
- \_\_\_\_\_ Off-site areas - Include any off-site land-disturbing activities (e.g., borrow sites, disposal areas, etc.) not covered by a separate approved ESC Plan.
- \_\_\_\_\_ Legend - Provide a complete listing of all ESC measures used, including the VESCH uniform code symbol and the standard and specification number. Include any other items necessary to identify pertinent features in the plan.
- \_\_\_\_\_ Property lines and easements - Show all property and easement lines. For each adjacent property, list the deed book and page number and the property owner's name and address.
- \_\_\_\_\_ Existing vegetation - Show the existing tree lines, grassed areas, or unique vegetation.
- \_\_\_\_\_ Limits of clearing and grading - Delineate all areas that are to be cleared and graded.
- \_\_\_\_\_ Protection of areas not being cleared - Fencing or other measures to protect areas that are not to be disturbed on the site.
- \_\_\_\_\_ Critical areas - Note all critical areas on the plan.
- \_\_\_\_\_ Existing contours - Show the existing contours of the site.
- \_\_\_\_\_ Final contours and elevations - Show changes to the existing contours, including final drainage patterns.
- \_\_\_\_\_ Site development - Show all improvements such as buildings, parking lots, access roads, utility construction, etc. Show all physical items that could affect or be affected by erosion, sediment, and drainage.
- \_\_\_\_\_ Location of practices - The locations of erosion and sediment control and stormwater management practices used on the site. Use the standard symbols and abbreviations in Chapter 3 of the VESCH.
- \_\_\_\_\_ Adequate Conveyances - Ensure that stormwater conveyances with adequate capacity and adequate erosion resistance have been provided for all on-site concentrated stormwater runoff. Off-site channels that receive runoff from the site, including those receiving runoff from stormwater management facilities, must be adequate. Increased volumes of sheet flows must be diverted to a stable outlet, adequate channel, pipe or pipe system, or a stormwater management facility.

**PROJECT NAME:** \_\_\_\_\_ **SUBMITTAL#:** \_\_\_\_\_

**PLANS DATED:** \_\_\_\_\_

- ☐ Provide exhibits showing the drainage divides, the direction of flow, and the size (acreage) of each of the site drainage areas that discharge runoff off-site, both existing and proposed.
- ☐ Provide calculations for pre- and post-development runoff from these drainage areas.
- ☐ Ensure that Minimum Standard 19 is satisfied for each off-site receiving channel, including those that receive runoff from stormwater management facilities.
- ☐ Provide calculations for the design of each permanent stormwater management facility.
- ☐ Ensure that increased volumes of sheet flows are diverted to a stable outlet, to an adequate channel, pipe or pipe system, or to a stormwater management facility.
- ☐ Provide adequacy calculations for all on-site stormwater conveyances.

\_\_\_\_\_ Calculations for permanent stormwater conveyances - For each permanent stormwater conveyance or structure, provide the following design calculations, as applicable:

- ☐ Drainage area map with time of concentration ( $T_c$ ) path shown
- ☐  $T_c$  calculation/nomograph
- ☐ Locality IDF curve
- ☐ Composite runoff coefficient or RCN calculation
- ☐ Peak runoff calculations
- ☐ Stormwater conveyance channel design calculations
- ☐ Storm drain and storm sewer system design calculations
- ☐ Hydraulic Grade Line if any pipe in the system is more than 90% full for a 10-year storm
- ☐ Culvert design calculations
- ☐ Drop inlet backwater calculations
- ☐ Curb inlet length calculations

\_\_\_\_\_ Direction of Flow for Conveyances - Indicate the direction of flow for all stormwater conveyances (storm drains, stormwater conveyance channels).

\_\_\_\_\_ Storm Drain Profiles - Provide profiles of all storm drains except roof drains. If the type of pipe (RCP, CMP, HDPE, etc.) is not called out on the profiles, then the most conservative pipe material that may be specified for the project must be used in the adequacy calculations.

**PROJECT NAME:** \_\_\_\_\_ **SUBMITTAL#:** \_\_\_\_\_

**PLANS DATED:** \_\_\_\_\_

**MINIMUM STANDARDS**

Plan Sheet # \_\_\_\_\_

**Minimum Standards - All Minimum Standards must be addressed.**

**Yes No NA**

- |                          |                          |                          |       |   |
|--------------------------|--------------------------|--------------------------|-------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | MS-1  | Have temporary and permanent stabilization been addressed in the narrative?   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |       | Are practices shown on the plan?  |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |       | Temporary and permanent seed specifications?  |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |       | Lime and fertilizer?  |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |       | Mulching?   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |       | Blankets/Matting?   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |       | Pavement/Construction Road Stabilization?   |
|                          |                          |                          |       |   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | MS-2  | Has stabilization of soil stockpiles, borrow areas, and disposal areas been addressed in the narrative and on the plan?   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |       | Have sediment trapping measures been provided?  |
|                          |                          |                          |       |   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | MS-3  | Has the establishment and maintenance of permanent vegetative stabilization been addressed?   |
|                          |                          |                          |       |   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | MS-4  | Does the plan specifically state that sediment-trapping facilities shall be constructed as a first step in land-disturbing activities?                              |
|                          |                          |                          |       |   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | MS-5  | Does the plan specifically state that stabilization of earthen structures is required immediately after installation? Is this noted for each measure on the plan?   |
|                          |                          |                          |       |   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | MS-6  | Are sediment traps and sediment basins specified where needed and designed to the standard and specification?   |
|                          |                          |                          |       |   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | MS-7  | Have the design and temporary/permanent stabilization of cut and fill slopes been adequately addressed? Is Surface Roughening provided for slopes steeper than 3:1? |
|                          |                          |                          |       |   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | MS-8  | Have adequate temporary or permanent conveyances (paved flumes, channels, slope drains) been provided for concentrated stormwater runoff on cut and fill slopes?    |
|                          |                          |                          |       |   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | MS-9  | Has water seeping from a slope face been addressed (e.g., subsurface drains)?   |
|                          |                          |                          |       |   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | MS-10 | Is adequate inlet protection provided for all operational storm drain and culvert inlets?   |

**PROJECT NAME:** \_\_\_\_\_ **SUBMITTAL#:** \_\_\_\_\_

**PLANS DATED:** \_\_\_\_\_

**Yes No NA**

- ☐ ☐ ☐ MS-11 Are adequate outlet protection and/or channel linings provided for all stormwater conveyance channels and receiving channels? Is there a schedule indicating:  
☐ ☐ ☐ Dimensions of the outlet protection? Lining? Size of riprap?  
☐ ☐ ☐ Cross section and slope of the channels? Type of lining? Size of riprap, if used?
- ☐ ☐ ☐ MS-12 Are in-stream protection measures required so that channel impacts are minimized?
- ☐ ☐ ☐ MS-13 Are temporary stream crossings of non-erodible material required where applicable?
- ☐ ☐ ☐ MS-14 Are all applicable federal, state and local regulations pertaining to working in or crossing live watercourses being followed?
- ☐ ☐ ☐ MS-15 Has immediate restabilization of areas subject to in-stream construction (bed and banks) been adequately addressed?
- ☐ ☐ ☐ MS-16 Have disturbances from underground utility line installations been addressed?  
☐ ☐ ☐ No more than 500 linear feet of trench open at one time?  
☐ ☐ ☐ Effluent from dewatering filtered or passed through a sediment-trapping device?  
☐ ☐ ☐ Proper backfill, compaction, and restabilization?
- ☐ ☐ ☐ MS-17 Is the transport of soil and mud onto public roadways properly controlled? (i.e., Construction Entrances, wash racks, transport of sediment to a trapping facility, cleaning of roadways at the end of each day, no washing before sweeping and shoveling)
- ☐ ☐ ☐ MS-18 Has the removal of temporary practices been addressed?  
☐ ☐ ☐ Have the removal of accumulated sediment and the final stabilization of the resulting disturbed areas been addressed?
- ☐ ☐ ☐ MS-19 Are properties and waterways downstream from development adequately protected from sediment deposition, erosion, and damage due to increases in volume, velocity and peak flow rate of stormwater runoff? Have adequate channels been provided on-site?

**PROJECT NAME:** \_\_\_\_\_ **SUBMITTAL#:** \_\_\_\_\_

**PLANS DATED:** \_\_\_\_\_



**AS&S TABLES AND CHECKLISTS  
APPENDIX P**

---

**SWM Plan Checklist**

## **PLAN SUBMITTER'S CHECKLIST**

### **FOR STORMWATER MANAGEMENT PLANS**

Please fill in all blanks and **please reference the plan sheets/pages where the information may be found**, where appropriate, or write N/A by items that are not applicable.

#### **GENERAL**

Plan Submission Date \_\_\_\_\_  
Project Name \_\_\_\_\_  
VSMP Permit Number \_\_\_\_\_  
Site Plan Number \_\_\_\_\_  
Site Address \_\_\_\_\_  
Applicant \_\_\_\_\_ Phone Number \_\_\_\_\_  
Applicant Legal Address \_\_\_\_\_  
Owner \_\_\_\_\_ Phone Number \_\_\_\_\_  
Owner E-mail Address \_\_\_\_\_  
Principal Designer \_\_\_\_\_ Phone Number \_\_\_\_\_  
Principal Designer E-mail Address \_\_\_\_\_  
Total Disturbed Area Figure \_\_\_\_\_

\_\_\_\_\_ **Professional's seal** - The designer's original seal, signature, and date are required on the *cover* sheet of each Narrative and each set of Plan Sheets. A facsimile is acceptable for subsequent Plan Sheets.

\_\_\_\_\_ **Number of plan sets** – Attach two sets of SWM Plans.

\_\_\_\_\_ **Exceptions** - Exceptions requested are governed by Section 9VAC25-870-57 of the *Virginia Stormwater Management Regulations*.

\_\_\_\_\_ **Local Consideration** – Provide contact information for the locality's plan review coordinator.

Name \_\_\_\_\_ Phone Number \_\_\_\_\_  
Address \_\_\_\_\_

\_\_\_\_\_ **Grandfathering** - Attach supporting documentation consistent with the requirements of Section 9VAC25-870-48 of the *Virginia Stormwater Management Regulations*.

\_\_\_\_\_ **Offsite Compliance** – Attach letter of availability from the off-site provider as governed by Section 9VAC25-870-55 of the *Virginia Stormwater Management Regulations*.

**PROJECT NAME:** \_\_\_\_\_ **SUBMITTAL#:** \_\_\_\_\_

**PLANS DATED:** \_\_\_\_\_

**CHECKLIST PREPARER**

I certify that I am a professional in adherence to all minimum standards and requirements pertaining to the practice of that profession in accordance with Chapter 4 (§ 54.1-400 et seq.) of Title 54.1 of the Code of Virginia and attendant regulations. By signing this checklist I am certifying that this document and all attachments are, to the best of my knowledge and belief, true, accurate, and complete.

SIGNATURE \_\_\_\_\_

PRINTED NAME \_\_\_\_\_

QUALIFICATIONS \_\_\_\_\_

DATE \_\_\_\_\_

PROJECT NAME: \_\_\_\_\_ SUBMITTAL#: \_\_\_\_\_

PLANS DATED: \_\_\_\_\_

## SITE PLANS

**Please reference the plan sheet numbers** where specific information may be found in the blanks below.

- \_\_\_\_\_ Common address and legal description of the site, including the tax reference number(s) and parcel number(s) of the property or properties affected.
- \_\_\_\_\_ A narrative that includes a description of current site conditions and proposed development and final site conditions, including proposed use of environmental site design techniques and practices, stormwater control measures, relevant information pertaining to long-term maintenance of these measures, and a construction schedule.
- \_\_\_\_\_ Existing and proposed mapping and plans (recommended scale of 1" = 50', or greater detail), which illustrates the following at a minimum:
- ☐ North arrow
  - ☐ Legend
  - ☐ Vicinity map
  - ☐ Existing and proposed topography (minimum of 2-foot contours recommended)
  - ☐ Property lines
  - ☐ Perennial and intermittent streams
  - ☐ Mapping of predominant soils from USDA soils surveys as well as the location of any site-specific test bore hole investigations that may have been conducted and information identifying the hydrologic characteristics and structural properties of soils used in the installation of stormwater management facilities
  - ☐ Boundaries of existing predominant vegetation and proposed limits of clearing and grading
  - ☐ Location and boundaries of natural feature protection and conservation areas (e.g., wetlands, lakes, ponds, aquifers, public drinking water supplies, etc.) and applicable setbacks (e.g., stream buffers, drinking water well setbacks, septic drainfield setbacks, building setbacks, etc.)
  - ☐ Identification of any on-site or adjacent water bodies included on the Virginia 303(d) list of impaired waters
  - ☐ Current land use and location of existing and proposed roads, buildings, parking lots and other impervious areas
  - ☐ Location and description of any planned demolition of existing structures, roads, etc.
  - ☐ Proposed land use(s) with a tabulation of the percentage of surface area to be adapted to various uses, including but not limited to planned locations of utilities, roads, parking lots, stormwater management facilities, and easements
  - ☐ Location of existing and proposed utilities [e.g., water (including wells), sewer (including septic systems), gas, electric, telecommunications, cable TV, etc.] and easements
  - ☐ Earthwork specifications
  - ☐ Show the BMP name, **geographic coordinates** and design of both structural and non-structural stormwater control measures, including maintenance access and limits of disturbance
  - ☐ Storm drainage plans for site areas not draining to any BMP(s)
  - ☐ Location of existing and proposed conveyance systems, such as storm drains, inlets, catch basins, channels, lateral groundwater movement interceptors (French drains, agric. tile drains, etc.), swales, and areas of overland flow, including grades, dimensions, and direction of flow
  - ☐ Final drainage patterns and flow paths
  - ☐ Location of floodplain/floodway limits and relationship of site to upstream and downstream properties and drainage systems

**PROJECT NAME:** \_\_\_\_\_ **SUBMITTAL#:** \_\_\_\_\_

**PLANS DATED:** \_\_\_\_\_

- ☐ Location of all contributing drainage areas and points of stormwater discharge, receiving surface waters or karst features into which stormwater discharges, the pre-development and post-development conditions for drainage areas, and the potential impacts of site stormwater on adjoining parcels
- ☐ Location and dimensions of proposed channel modifications, such as bridge or culvert crossings
- ☐ Final stabilization and landscaping plans

\_\_\_\_\_ Hydrologic and hydraulic analysis, including the following:

- ☐ Site map with locations of design points and drainage areas (size in acres) for runoff calculations
- ☐ Identification and calculation of stormwater site design credits, if any apply
- ☐ Summary description of the water quantity and water quality compliance strategy.
- ☐ Time of concentration (and associated flow paths)
- ☐ Imperviousness of the entire site and each drainage area
- ☐ NRCS runoff curve numbers or volumetric runoff coefficients
- ☐ A hydrologic analysis for the existing (pre-development) conditions, including runoff rates, volumes, and velocities, showing the methodologies used and supporting calculations
- ☐ A hydrologic analysis for the proposed (post-development) conditions, including runoff rates, volumes, and velocities, showing the methodologies used and supporting calculations
- ☐ Hydrologic and hydraulic analysis of the stormwater management system for all applicable design storms
- ☐ Pollution load and load reduction requirements and calculations
- ☐ Final good engineering and sizing calculations for stormwater control measures, including contributing drainage areas, storage, and outlet configurations, verifying compliance with the water quality and water quantity requirements of the regulations
- ☐ Stage-discharge or outlet rating curves and inflow and outflow hydrographs for storage facilities
- ☐ Final analysis of the potential downstream impacts/effects of the project, where necessary
- ☐ Downstream analysis, where detention is proposed
- ☐ Dam safety and breach analysis, where necessary

\_\_\_\_\_ Representative cross-section and profile drawings and details of stormwater control measures and conveyances which include the following:

- ☐ Existing and proposed structural elevations (e.g., inverts of pipes, manholes, etc.)
- ☐ Design water surface elevations
- ☐ Structural details of BMP designs, outlet structures, embankments, spillways, grade control structures, conveyance channels, etc.

\_\_\_\_\_ Applicable construction and material specifications, including references to applicable material and construction standards (ASTM, etc.)

\_\_\_\_\_ Landscaping plans for stormwater control measures and any site reforestation or revegetation

**PROJECT NAME:** \_\_\_\_\_ **SUBMITTAL#:** \_\_\_\_\_

**PLANS DATED:** \_\_\_\_\_

- \_\_\_\_\_ Long term operations and maintenance plan/agreement as governed by 9VAC25-870-112 of the Virginia Stormwater Management Program Regulations.
- \_\_\_\_\_ Evidence of acquisition of all applicable local and non-local permits
- \_\_\_\_\_ Waiver/exception requests
- \_\_\_\_\_ Evidence of acquisition of all necessary legal agreements (e.g., easements, covenants, land trusts, etc.)
- \_\_\_\_\_ Applicable supporting documents and studies (e.g., infiltration tests, geotechnical investigations, TMDLs, flood studies, etc.)
- \_\_\_\_\_ Other required permits: \_\_\_\_\_

**PROJECT NAME:** \_\_\_\_\_ **SUBMITTAL#:** \_\_\_\_\_

**PLANS DATED:** \_\_\_\_\_

**A&S TABLES AND CHECKLISTS  
APPENDIX Q**

---

# **Plan Approval Memorandum Template**



Transcontinental Gas Pipe Line Company, LLC  
2800 Post Oak Boulevard  
Houston, Texas 77056  
713-215-2000

**Month XX, 2020**

Office of Stormwater Management  
Virginia Department of Environmental Quality (VDEQ)  
Central Office  
1111 East Main Street, Suite 1400  
Richmond, VA 23219

Re: Transcontinental Gas Pipe Line Company, LLC  
Annual Standards & Specification for Erosion & Sediment Control and Stormwater  
Management (AS&S for ESC and SWM)  
Plan Approval Memorandum

**Project ID:**

**Date of Plan Being Approved:**

Transcontinental Gas Pipe Line Company, LLC (Transco) hereby provides the following Plan Approval Memorandum in accordance with AS&S Section 4; 4.1 & 4.1.1

**VDEQ-Certified Plan Reviewer**

Name	Certificate No.	Expiration Date

Signature: \_\_\_\_\_

**VDEQ-Certified Program Administrator**

Name	Certificate No.	Expiration Date

Signature: \_\_\_\_\_

**Note:** A comment / revision tracker is provided below.



Date	Comment / Proposed Plan Revision	Response / Revision Implementation	VDEQ-Certified Plan Reviewer Initials	VDEQ-Certified Program Administrator Initials

Date	Comment / Proposed Plan Revision	Response / Revision Implementation	VDEQ-Certified Plan Reviewer Initials	VDEQ-Certified Program Administrator Initials

Date	Comment / Proposed Plan Revision	Response / Revision Implementation	VDEQ-Certified Plan Reviewer Initials	VDEQ-Certified Program Administrator Initials

Date	Comment / Proposed Plan Revision	Response / Revision Implementation	VDEQ-Certified Plan Reviewer Initials	VDEQ-Certified Program Administrator Initials

**A&S TABLES AND CHECKLISTS  
APPENDIX R**

---

# **ESC and SWM Inspection Report Template**



# VDEQ Self Inspection Report

Report No.:

Date:

v7 - 08282020

## PROJECT INFORMATION

Project Name & Work Order:	
Date of Inspection:	
Time of Inspection:	
Weather:	<input type="checkbox"/> Clear <input type="checkbox"/> P/C <input type="checkbox"/> Rain <input type="checkbox"/> Windy <input type="checkbox"/> Snow
Temperature:	Low High
Date of Last Inspection:	
Date of Last Measurable Rainfall/Storm Event:	
Rainfall Amount (inches):	
Inspectors Name:	

Additional Personnel/Project Representative:	
Name	Representing
1)	1)
2)	2)

## INSPECTION TYPE

Weekly: Select One

Post-Rainfall: Select One

## PLAN APPROVAL STATUS

Is the SWPPP located onsite as required by regulation?:	Select One
On what date was the SWPPP last updated?:	Select One
For this project, have there been any changes or variances to the approved ESC or SWM plan?:	Select One
Comments:	

## INSPECTIONS OF LINEAR PROJECTS (880 Part II, F.2)

Has temporary or permanent seeding been installed, such that vehicle access may compromise the stabilization and potentially increase erosion?:	Select One
If yes, are/were inspections conducted on the same frequency as other activities?:	Select One
Identify in the space provided below, each location (0.25 miles above and below each access point) and observations at each location:	
Comments:	

## LAND DISTURBANCE ACTIVITY (880 Part II, F.2)

Site construction conforms with approved Erosion & Sedimentation Control (ESC) plan:	Select One
1) A properly implemented ESC plan should minimize erosion potential through the following actions:	
a) All perimeter control practices (such as silt fence) identified on the plan installed as a first step measure (MS-4):	Select One
b) Soil stockpile and borrow areas properly stabilized and/or trapping measures installed (MS-2):	Select One
c) Earthen structures (such as dams, dikes, diversions) stabilized immediately (MS-5):	Select One
d) Cut and fill slopes are constructed in a manner to minimize erosion (MS-7):	Select One
Please continue to Page 2.	



# VDEQ Self Inspection Report

Report No.: \_\_\_\_\_

Date: \_\_\_\_\_

v7 - 08282020

## LAND DISTURBANCE ACTIVITY (880 Part II, F.2) - CONTINUED

<b>1) A properly implemented ESC plan should minimize erosion potential through the following actions:</b>	
e) Sediment basins, traps, and barriers installed according to approved plan (MS-6):	Select One
f) Concentrated runoff conveyed down a cut or fill slope in an adequate temporary or permanent channel, flume or slope drain structure (MS-8):	Select One
g) Storm inlets made operable during construction are protected so sediment laden water cannot enter without first being filtered (MS-10):	Select One
h) Provisions have been made to minimize the transport of sediment from the site onto paved surfaces (MS-17):	Select One
i) Have areas at final grade been inspected to verify permanent (within 7-days) soil stabilization (MS-1):	Select One
j) Have areas at final grade been inspected to verify temporary (dormant for 14+ days) temporary soil stabilization (MS-1):	Select One
<b>2) Land disturbance activity been confined only to the area designated on the approved ESC plan:</b>	Select One
<b>3) All soil stockpiles located onsite and previously identified:</b>	Select One
<b>4) If you answered "NO" to any of the Land Disturbance Activity questions above, provide a summary of the findings including:</b>	
Location(s)	of any prohibited discharges; of all control practices that require maintenance; of any control practices which failed to operate as designed or proved inadequate; where additional control practices may be needed:
Comments:	

## MAINTENANCE ACTIVITY (880 Part II, F.3)

<b>1) With respect to ESC maintenance, categorize the following items/activities since the last inspection:</b>	
a) Was any sediment laden (turbid) water discharged without being filtered or settled to remove sediment?	Select One
b) Was sediment deposition in areas draining to unprotected inlets observed?	Select One
c) Were inlets and catch basins with failing sediment controls observed?	Select One
d) Was sediment deposition observed on property (including public or private) outside the activity covered by the construction general permit?	Select One
e) Was the discharge of stormwater below the surface of the wet storage observed from any sediment basins?	Select One
f) Was the discharge of stormwater below the surface of the wet storage observed from any sediment traps?	Select One
<b>Please continue to Page 3.</b>	



# VDEQ Self Inspection Report

Report No.: \_\_\_\_\_

Date: \_\_\_\_\_

v7 - 08282020

## MAINTENANCE ACTIVITY (880 Part II, F.3) - CONTINUED

- 2) If you answered "YES" to any of the Maintenance Activity questions on Page 2., provide a summary of the findings including:

Location(s) of any prohibited discharges and whether they have been corrected;  
of all control practices that require maintenance;  
of any control practices which failed to operate as designed or proved inadequate;  
where additional control practices may be needed:

Comments:

## POLLUTION PREVENTION (P2) PLAN (880 Part II, F.3 & F.4)

- 1) Identify in the space provided below, any pollution generating activities identified in the P2 plan:

Comments:

- 2) Were any of the above activities **NOT INSPECTED** to determine if the effectiveness and maintenance of the procedures were consistent with the P2 Plan? Select One

- 3) During the inspection, were any pollutant generating activities observed which are not identified in the original P2 or SWPPP Plans? Select One

- 4) If you answered "YES" to the questions above, identify/describe the activities in the space provided below:

Comments:

- 5) Did you observe any evidence of pollutant discharge or any other pollutant generating activities, which would require the SWPPP be updated? Select One

- 6) If you answered "YES" to the questions above, provide a list of corrective actions needed in the space provided below:

Comments:

- 7) **Petroleum Product/Material Storage Areas:**  
Are all of the temporary and permanent controls contained in Plan in place? Select One

- 8) If "NO", describe the location(s) of deficiencies and corrective actions that must be taken below.

Comments:

- 9) **Vehicle Entrances and Exits:**  
Is there tracking of sediment from locations where vehicles enter and leave the project? Select One

- 10) If "YES", describe the location(s) of deficiencies and corrective actions that must be taken below.

Comments:





# VDEQ Self Inspection Report

Report No.: \_\_\_\_\_

Date: \_\_\_\_\_

v7 - 08282020

## SUMMARY

- 1) With respect to all three sections above (Land Disturbance, Maintenance, and Pollution Prevention), list any/all corrective actions identified in the last evaluation which have not yet been implemented:

Comments:

- 2) With respect to this inspection report, check one of the following statements:

- ☐ Incidents of noncompliance were identified during this inspection  
☐ The construction activity is in compliance with the SWPPP and the General Permit

- 3) Additional comments regarding the inspection?

Select One

- 4) If "YES", include necessary text below:

Comments:

Inspector Signature (Print & Sign):

Date:

Please continue to Page 5. for Photographic Log.



VDEQ Self Inspection Report

Report No.:  
Date:

v7 - 08282020

PHOTOGRAPHIC LOG

1) Image Description & Location		2) Image Description & Location	
Comments:		Comments:	

3) Image Description & Location		4) Image Description & Location	
Comments:		Comments:	



VDEQ Self Inspection Report

Report No.:  
Date:

v7 - 08282020

PHOTOGRAPHIC LOG

5) Image Description & Location		6) Image Description & Location	
Comments:		Comments:	
<div></div>		<div></div>	

7) Image Description & Location		8) Image Description & Location	
Comments:		Comments:	
<div></div>		<div></div>	



VDEQ Self Inspection Report

Report No.:  
Date:

v7 - 08282020

PHOTOGRAPHIC LOG

9) Image Description & Location		10) Image Description & Location	
Comments:		Comments:	
<div></div>		<div></div>	

11) Image Description & Location		12) Image Description & Location	
Comments:		Comments:	
<div></div>		<div></div>	



VDEQ Self Inspection Report

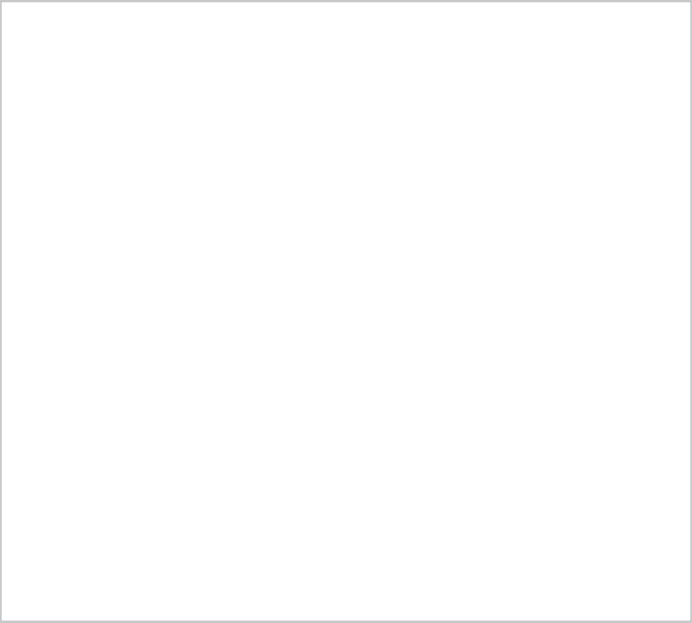
Report No.:

Date:

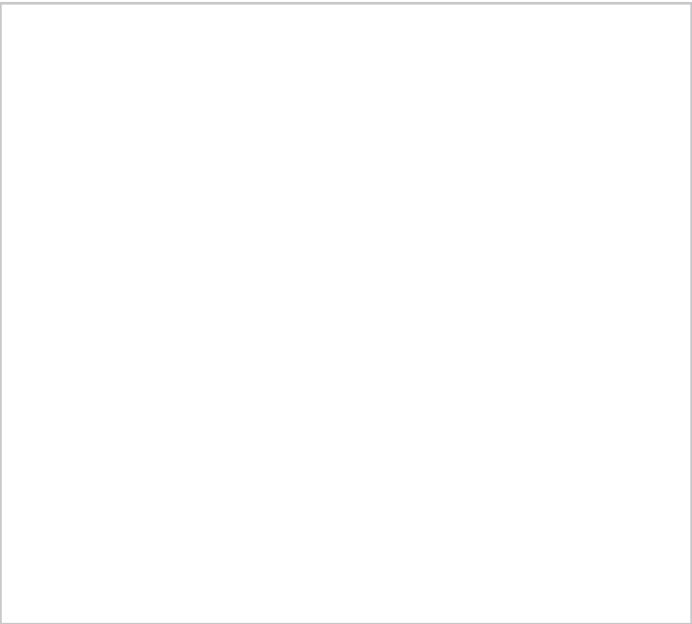
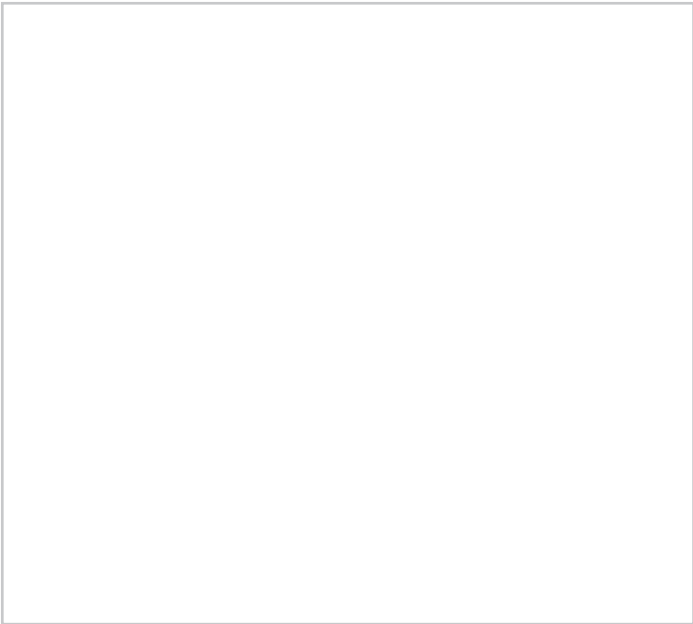
v7 - 08282020

PHOTOGRAPHIC LOG

13) Image Description & Location		14) Image Description & Location	
Comments:		Comments:	



15) Image Description & Location		16) Image Description & Location	
Comments:		Comments:	





VDEQ Self Inspection Report

Report No.: \_\_\_\_\_

Date: \_\_\_\_\_

v7 - 08282020

PHOTOGRAPHIC LOG

17) Image Description & Location		18) Image Description & Location	
Comments:		Comments:	
<div></div>		<div></div>	

19) Image Description & Location		20) Image Description & Location	
Comments:		Comments:	
<div></div>		<div></div>	

**AS&S TABLES AND CHECKLISTS  
APPENDIX S**

---

**Deviation Request Log**

**Transcontinental Gas Pipe Line Company, LLC**

## Deviation Request Log

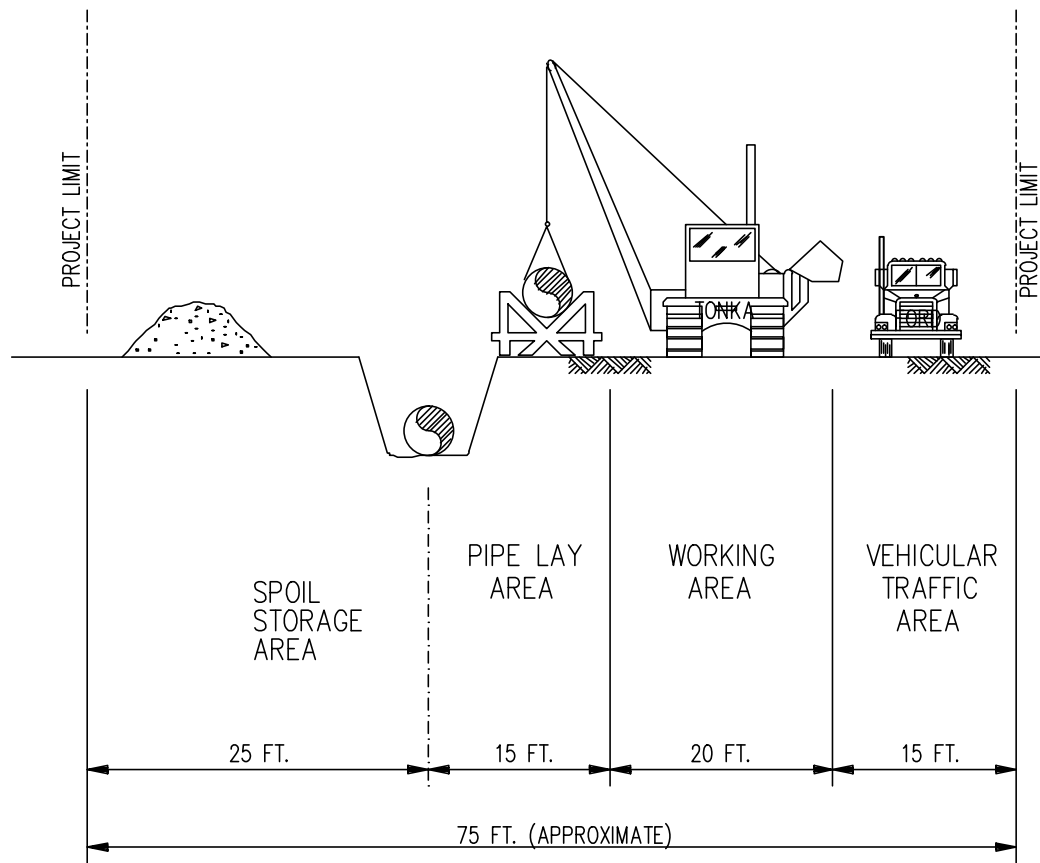
[illegible]



CONSTRUCTION STANDARD DETAILS  
APPENDIX T

---

## Typical Section of Construction Right-Of-Way



NOTES:

1. ALL DIMENSIONS ARE APPROXIMATE.
2. ADDITIONAL WIDTH MAY BE DICTATED BY SOIL CONDITIONS, SLOPES OR CONGESTION.
3. SOIL REMOVED DURING TRENCHING SHOULD BE PLACED UPSLOPE OF THE TRENCH WHEREVER POSSIBLE.

TYPICAL SECTION OF  
CONSTRUCTION RIGHT-OF-WAY

VIRGINIA

NO.	DATE	REVISION DESCRIPTION	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION  
STANDARD ENVIRONMENTAL DETAIL

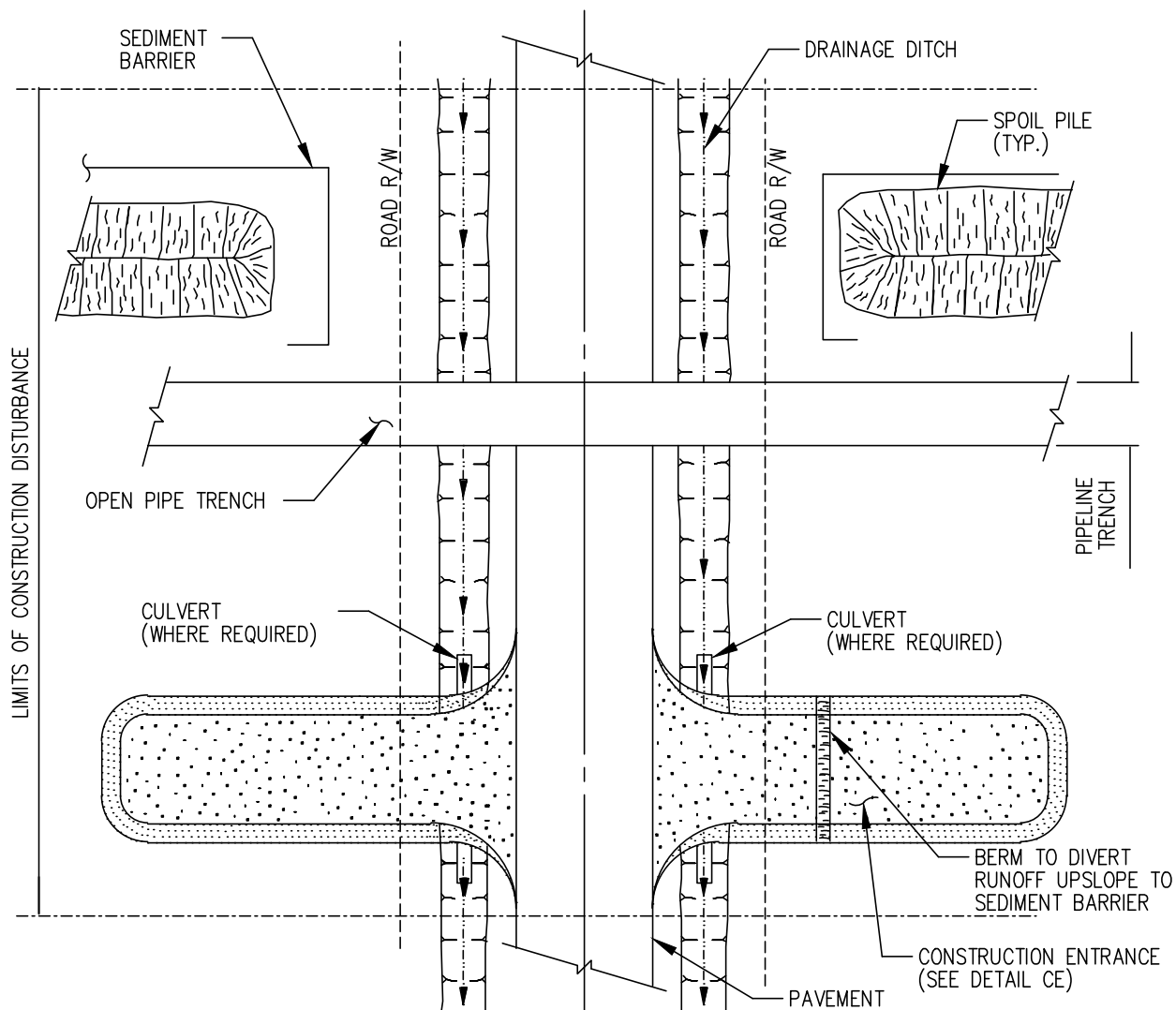


TYPICAL SECTION OF  
CONSTRUCTION RIGHT-OF-WAY

CONSTRUCTION STANDARD DETAILS  
APPENDIX U

---

## **Trenched Road Crossing (RX.1)**



NOTES:

1. SEDIMENT BARRIER SHALL BE INSTALLED AT THE BASE OF SLOPES ADJACENT TO ROAD CROSSINGS WHERE VEGETATION IS DISTURBED, TO INTERCEPT SURFACE RUNOFF.
2. PROTECTION FOR SPOIL PILES SHALL BE INSTALLED ONLY WHERE SEDIMENT BARRIERS ACROSS THE ENTIRE DISTURBED AREA ARE NOT REQUIRED.
3. SEDIMENT BARRIERS SHALL REMAIN IN PLACE UNTIL PERMANENT REVEGETATION IS ESTABLISHED.
4. CULVERTS TO BE SIZED AND PLACED WHERE REQUIRED TO MAINTAIN WATER FLOW.
5. CONTRACTOR SHALL BE REQUIRED TO KEEP THE ROAD CLEAN OF DEBRIS AT ALL TIMES.
6. CONTRACTOR MAY ELECT TO UTILIZE SHEET PILING IN ORDER TO STABILIZE PIPE TRENCH.
7. CONTRACTOR MAY ELECT TO UTILIZE WELL-POINTS IN ORDER TO REDUCE THE WATER TABLE PRIOR TO COMMENCING EXCAVATION.
8. DEPENDING ON TOPOGRAPHY AND STATE REQUIREMENTS, SEDIMENT BARRIER MAY BE REQUIRED ACROSS THE ENTIRE CONSTRUCTION RIGHT-OF-WAY AT THE EDGE OF ROAD. IN ADDITION TO THIS DETAIL, REFER TO THE ENVIRONMENTAL ALIGNMENT DRAWINGS FOR PLACEMENT OF SEDIMENT BARRIERS.

TRENCHED ROAD CROSSING  
 TEMPORARY EROSION CONTROL MEASURE

RX. 1

VIRGINIA

NO.	DATE	REVISION DESCRIPTION	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION  
 STANDARD ENVIRONMENTAL DETAIL  
 TRENCHED ROAD CROSSING

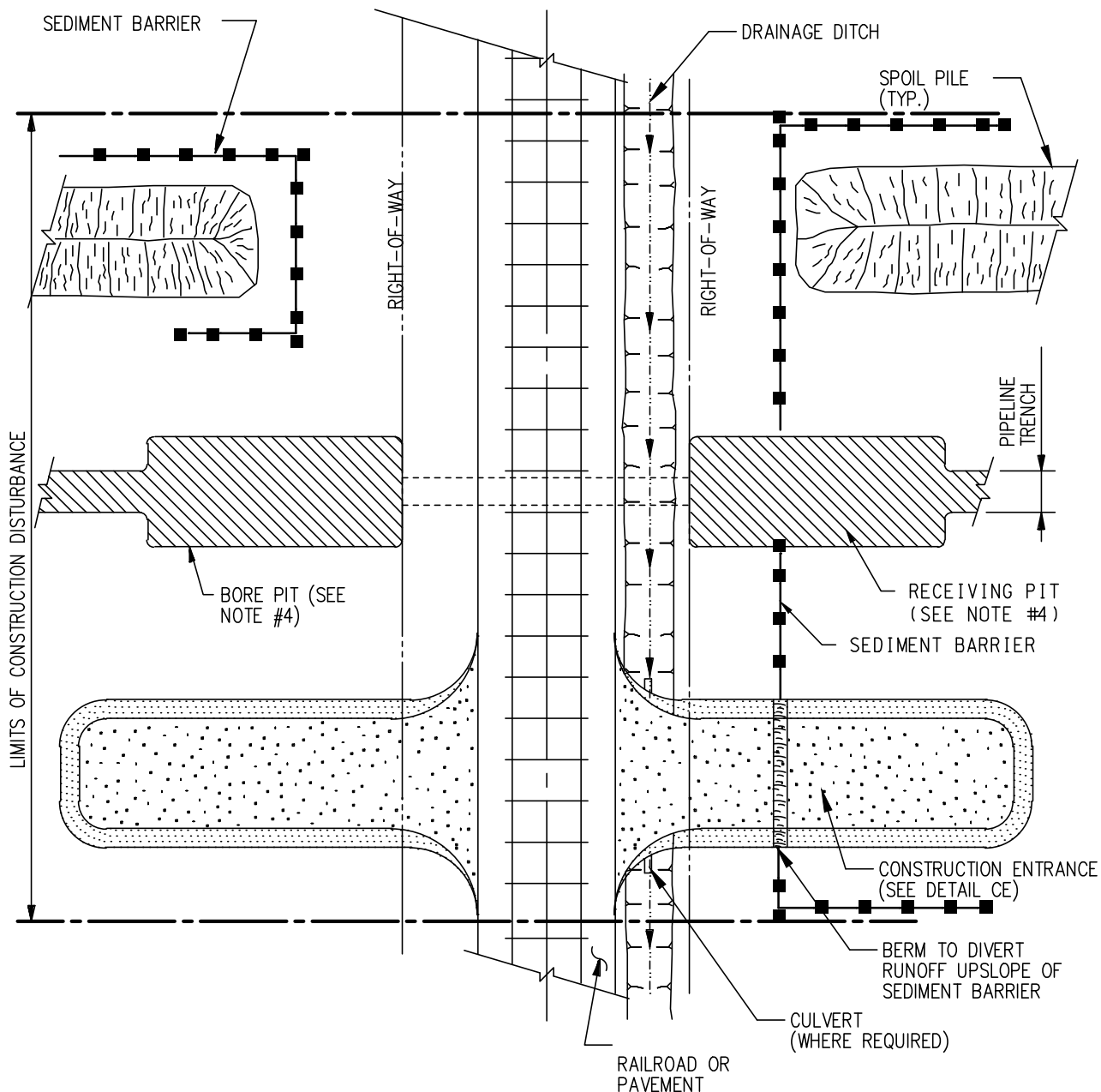
RX. 1



CONSTRUCTION STANDARD DETAILS  
APPENDIX V

---

**Bored Road / Railroad Crossing (RX.2)**



PLAN VIEW  
SCALE: N.T.S.

NOTES:

1. SEDIMENT BARRIER SHALL BE INSTALLED AT THE BASE OF SLOPES ADJACENT TO ROAD CROSSINGS WHERE VEGETATION IS DISTURBED, TO INTERCEPT SURFACE RUNOFF.
2. PROTECTION FOR SPOIL PILES SHALL BE INSTALLED ONLY WHERE SEDIMENT BARRIERS ACROSS THE ENTIRE DISTURBED AREA ARE NOT REQUIRED.
3. SEDIMENT BARRIERS SHALL REMAIN IN PLACE UNTIL PERMANENT REVEGETATION IS ESTABLISHED.
4. WATER REMOVED FROM BORE PIT AND RECEIVING PIT SHALL BE FILTERED THROUGH A DEWATERING STRUCTURE OR FILTER BAG.
5. IF WELL POINTING IS REQUIRED PRIOR TO EXCAVATING BORE PITS, CONTRACTOR SHALL CONSULT WITH COMPANY'S ENVIRONMENTAL INSPECTOR PRIOR TO COMMENCEMENT OF WORK IN ORDER TO DETERMINE PROPER DEWATERING LOCATION.
6. CONTRACTOR SHALL BE REQUIRED TO KEEP THE ROAD CLEAN OF DEBRIS AT ALL TIMES.
7. CONTRACTOR MAY ELECT TO UTILIZE SHEET PILING IN ORDER TO STABILIZE BORE PITS.
8. DEPENDING ON TOPOGRAPHY AND STATE REQUIREMENTS, SEDIMENT BARRIER MAY BE REQUIRED ACROSS THE ENTIRE CONSTRUCTION RIGHT OF WAY AT THE EDGE OF ROAD. IN ADDITION TO THIS DETAIL, REFER TO THE ENVIRONMENTAL ALIGNMENT DRAWINGS FOR PLACEMENT OF SEDIMENT BARRIERS.

BORED ROAD/RAILROAD CROSSING  
TEMPORARY EROSION CONTROL MEASURE

RX.2

VIRGINIA

NO.	DATE	REVISION DESCRIPTION	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION  
STANDARD ENVIRONMENTAL DETAIL

RX.2

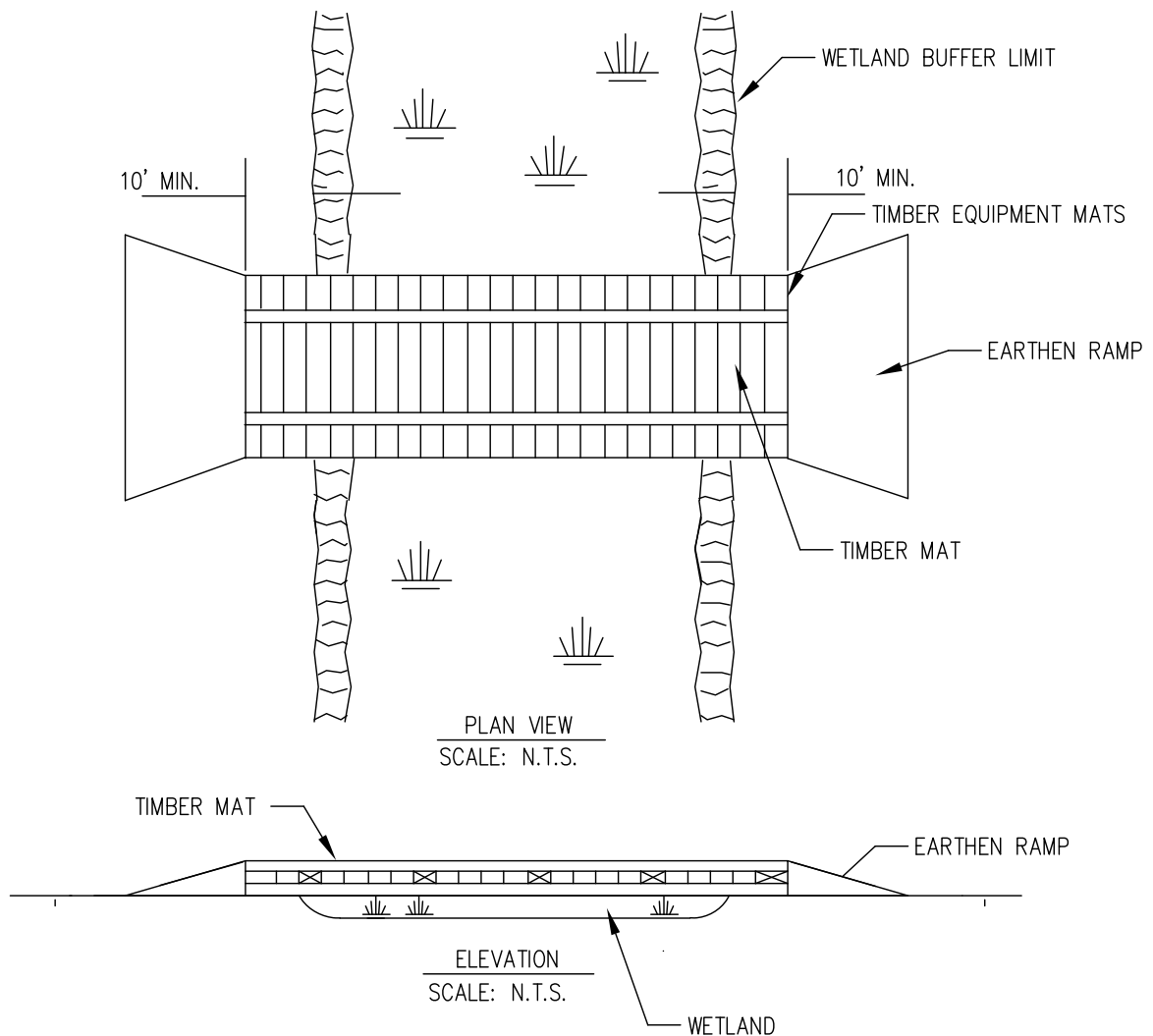
BORED ROAD/RAILROAD CROSSING



CONSTRUCTION STANDARD DETAILS  
APPENDIX W

---

## **Wetland Equipment Crossing (WEC)**



**NOTES:**

1. PERIODICALLY CHECK INSTALLATION AND REMOVE BUILD-UP OF SEDIMENT OR DEBRIS.
2. MATERIALS PLACED IN WETLANDS SHALL BE COMPLETELY REMOVED DURING FINAL CLEAN-UP. REMOVAL OF THIS STRUCTURE IS NOT CONTINGENT UPON ESTABLISHMENT OF PERMANENT VEGETATION.
3. IF A WATERBODY IS LOCATED WITHIN A WETLAND SYSTEM, EXTEND TIMBER EQUIPMENT MATS TO THE BRIDGE EQUIPMENT CROSSING (BEC) USED TO CROSS THE WATERBODY IN ORDER TO ALLOW FOR CONTINUOUS TIMBER EQUIPMENT MAT COVERAGE THROUGH THE WETLAND AND WATERBODY AREA.
4. USE ADDITIONAL TIMBER MAT LAYERS TO RAISE CROSSING ABOVE GRADE WHERE POOR SOIL CONDITIONS EXIST.
5. TIMBER EQUIPMENT MATS SHALL EXTEND A MINIMUM OF 10 FEET OUTSIDE OF THE WETLAND BOUNDARIES.
6. INSTALL EARTHEN RAMP APPROACHES TO TIMBER EQUIPMENT MATS. EARTHEN RAMPS TO BE CONSTRUCTED OF UPLAND MATERIAL, TOP SOIL SHALL NOT BE USED TO CONSTRUCT EARTHEN RAMPS.

## WETLAND EQUIPMENT CROSSING

TEMPORARY EROSION CONTROL MEASURE

WEC

VIRGINIA

NO.	DATE	REVISION DESCRIPTION	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE LLC  
STANDARD ENVIRONMENTAL DETAIL

WETLAND EQUIPMENT CROSSING

WEC

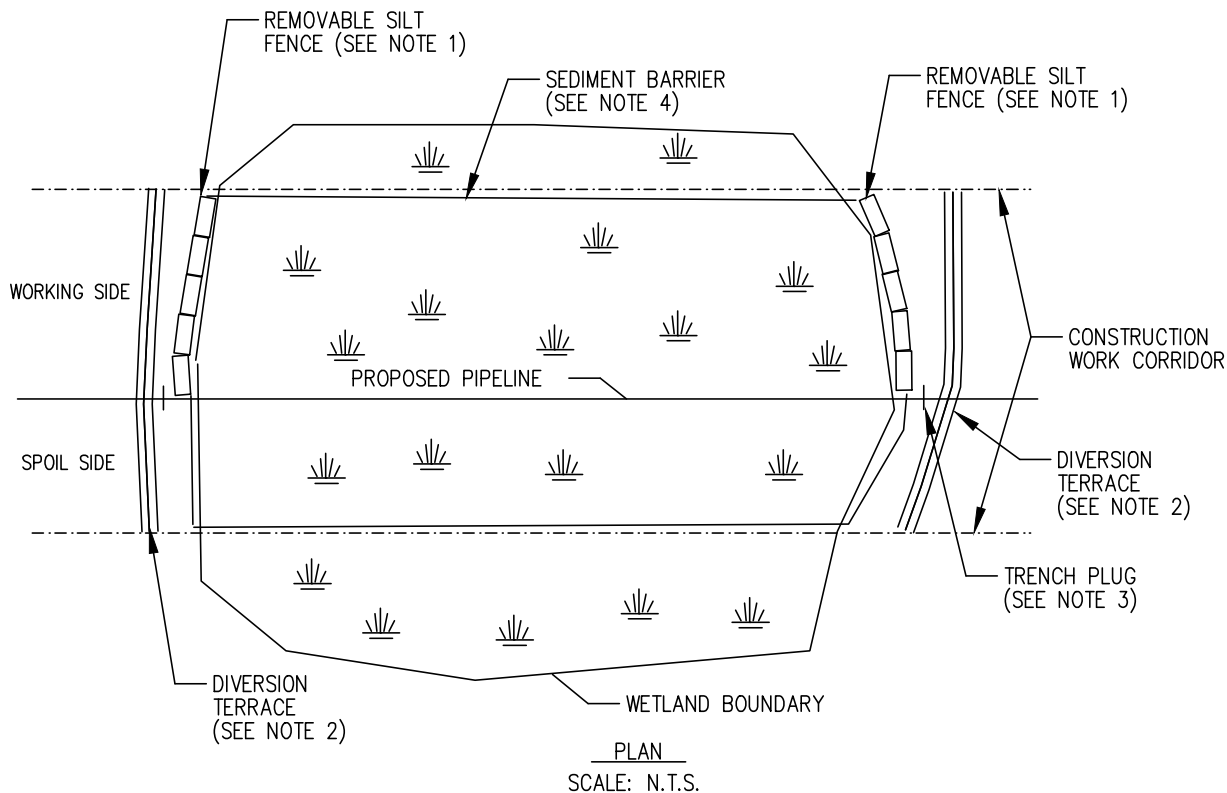




CONSTRUCTION STANDARD DETAILS  
APPENDIX X

---

## **Wetland Crossing Configuration (Type I, II, III)**



**NOTES:**

1. INSTALL REMOVABLE SEDIMENT BARRIERS (HAY BALES) OR DRIVEABLE BERMS ACROSS THE TRAVEL LANE AT BOTH WETLAND BOUNDARIES. THE REMOVABLE SEDIMENT BARRIERS CAN BE REMOVED DURING THE CONSTRUCTION DAY, BUT MUST BE RE-INSTALLED AFTER CONSTRUCTION HAS STOPPED FOR THE DAY AND/OR WHEN HEAVY PRECIPITATION IS IMMINENT.
2. INSTALL DIVERSION TERRACES IMMEDIATELY UPSLOPE OF BOTH WETLAND BOUNDARIES TO PREVENT SEDIMENT FROM ENTERING THE WETLAND.
3. INSTALL TRENCH PLUGS AT BOTH WETLAND BOUNDARIES TO PREVENT DIVERSION OF WATER INTO UPLAND PORTIONS OF THE PIPELINE TRENCH AND TO KEEP ANY ACCUMULATED UPLAND TRENCH WATER OUT OF WETLAND.
4. FOR TYPE II ("SATURATED") AND TYPE III ("FLOODED") WETLANDS, INSTALL SEDIMENT BARRIERS AT WETLAND BOUNDARIES AND ALONG BOTH WETLAND EDGES. FOR TYPE I ("DRY") WETLANDS, INSTALL SEDIMENT BARRIERS AT WETLAND BOUNDARIES, ALONG THE EDGE OF THE SPOIL SIDE OF THE CONSTRUCTION CORRIDOR AND ALONG THE DOWNSLOPE EDGE OF THE WETLAND. IF THE DOWNSLOPE EDGE OF THE WETLAND IS THE SPOIL SIDE, THEN SEDIMENT BARRIERS ARE NOT REQUIRED ON THE WORKING SIDE OF THE CORRIDOR UNLESS EQUIPMENT TRAVERSING THROUGH THE WETLAND CAUSES SPOIL AND SEDIMENT TO EXIT THE CONSTRUCTION CORRIDOR.

**WETLAND CROSSING CONFIGURATION**  
(TYPE I, II AND III WETLANDS)

VIRGINIA

NO.	DATE	REVISION DESCRIPTION	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION  
STANDARD ENVIRONMENTAL DETAIL  
WETLAND CROSSING CONFIGURATION  
TYPE I, II AND III WETLANDS



CERTIFICATIONS  
APPENDIX Y

---

## Certification Statement



**Transcontinental Gas Pipe Line Company, LLC**  
2800 Post Oak Boulevard  
Houston, Texas 77056  
713-215-2000

September 25, 2020

Re: Transcontinental Gas Pipe Line Company, LLC  
AS&S for ESC and SWM  
Certification Statement

I certify under penalty of law that all documents and all attachments related to the submission and updating of the Williams/Transcontinental Gas Pipeline Company's Annual Standards and Specifications for Erosion and Sediment Control and Stormwater Management have been prepared under my direction or supervision in a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of a fine and imprisonment for knowing violations.

Operators Name: Transcontinental Gas Pipe Line Company, LLC

Title: Manager of Permitting, Southeast

Name: Lynda Schubring

Signature:

A handwritten signature in blue ink, appearing to read "Lynda Schubring", written over a horizontal line.

Date: September 25, 2020